

THE
Indian Medical Gazette.

A MONTHLY JOURNAL OF

Medicine, Surgery, Public Health, and General Medical Intelligence,
Indian and European.

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REBOUND
DATE 12.8 APR 1972

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VOL. XXXVIII

Calcutta:
THACKER, SPINK & CO.

1903.

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CONTENTS

OF

VOL XXXVIII

OF

"THE INDIAN MEDICAL GAZETTE."

ORIGINAL ARTICLES —

	<i>Page</i>
The first two Hospitals in Calcutta By C R Wilson, M A, D LITT	1
Notes on the Early Hospitals of Calcutta By Lt-Col D G Crawford, M B I M S	3
Notes on the Origin of the Presidency General Hospital, Calcutta. By Major D M. Mon, A M, M D, I M S	7, 49, 93
Experimental Inoculation of Malaria, with a Relapse after eight months By Major C F Fearnside, I M S	10
Remarks on the Differential Count of the Leucocytes in Malarial and other Fevers of India By Capt S P James, M B, I M S	11
Serum Agglutination in Acute Dysentery By Capt W G Pridmore, I M S	13
Medico-Legal Notes By Arthur Powell, M Ch	16
A Note on an Operation for Hernia By A Neve, F R C S E	19
An Analysis of One Thousand Consecutive Cataract Extractions By F P. Maynard, M B, F R C S (Eng), D P H (Camb)	41, 90
Neurasthenia in Anglo-Indians By E F Gordon-Tucker, I M S	43
Notes on the Bacteriology of Dysentery and the Value of the Serum Test in its Differentiation By Leonard Rogers, M D, M R C P, I M S	53
Glioma of the Retina By Dr D H Nanavatty, F R C S	54
Report on the Outbreak of Epidemic Diopsy in the Barrisal Jail By Lieut-Col R Cobb, M D, I M S	81
M'Keown's Method of Irrigation in Cataract Operation By R H Elliot, M B, B S (Lond), F R C S (Eng)	121
The Pathology, Prevention and Treatment of Malignant Disease. By Capt E R Rost, I M S	127
Tubercle of Lungs in Bengal Jails By Capt John Mulvany, I M S	131
Cholera in the District of Puri, with a Special Account of the Epidemic during 1901 By H Sen, M B	135
Some Emergency Rations By C A Sprawson, M D (Lond), B S, I M S	161
Unaccustomed Plenty and Prevalence of Bowel-Complaints in Bengal Jails By Asst- Surgn Nohn C Dutt	163
Notes on the Mycoid Body found in the Blood Corpuscles in Remittent Fevers By W Leonard Biaddon, F R C S	168, 213, 291
Vesical Calculus By Lieut-Col W K Hatch, F R C S, I M S	201
Some Septic Infections and Nervous Lesions following Chancroids By Capt E F Gordon-Tucker, I M S	205
Note on the Climate of Erythrea By Lt-Col G M Giles, I M S (Retd)	211
Some Modern views on Primary Glaucoma By Capt R H Elliot, M B, B S (Lond), F R C S (Eng), I M S	241
A Note on Anopheles Fuliginosus and Sporozoites By Major J R. Adie, M B (Lond), I M S	246
The Dissemination of Enteric Fever by Dust By Major A R Aldridge, R.A.M.C	249
Cases Illustrating Difficulties in Plague Diagnosis By Major W J. Buchanan, M B, I M S, and Dr W C Hossack	249

ORIGINAL ARTICLES—*Concluded*

	<i>Page</i>
Colopexy for Prolapsus Recti By Lieut-Col R D Murray, I.M.S.	251
A New Field-Service Dooley By Lieut-Col C M Thompson, M.B., B.Ch., I.M.S.	281
Red Water and Rinderpest in Cattle By Stewart Stockman, C.V.D., India	282
Indian Milk Supply and Infective (Epidemic) Diarrhoea By Major D Simpson, M.B., I.M.S.	286
Extraction of Cataract in the Government Ophthalmic Hospital, Madras By Lieut-Col T H Pope, I.M.S.	321
Some Cases of Labour in Heart Disease By Capt Clayton Lane, M.D. (Lond.), I.M.S.	324
An Account of a Race of Idiots found in the Punjab, commonly known as "Shah Daula's Mice" By Capt G F W Ewens, M.D., I.M.S.	330
Further Notes on Experiments on the Pathology and Treatment of Malignant Disease By Capt E R Rost, I.M.S.	334
Perineal Litholapaxy in Children By Major J Garvie, M.B., B.Sc., I.M.S.	361
The Bhowanipuri Food Poisoning By J Nield Cook, D.P.H.	362
A Note on some cases of Poisoning by Scopolia Lunda,—Atropaceæ By Major A J Macnab, F.R.C.S., I.M.S.	365
A Generally Unknown Source of Enteric Fever By Surgn-Major W Beevor, R.A.M.C.	366
Adrenalin and its Uses in General Surgery By Capt H Gidney, F.R.C.S. (Edin.), D.P.H. (Camb.), I.M.S.	367
Notes on Operations for Abscess of the Liver, Ascites, and Gall-Stones By Capt W J Niblock, M.B., I.M.S.	401
Primary Carcinoma of the Liver By Capt E F Gordon-Tucker, I.M.S.	405
An Epidemic of Catarrhal Jaundice in Buxari Central Jail By Capt S Anderson, M.D., B.Sc., I.M.S.	407
Jaundice in Port Blair, Andaman Islands By Asst-Surgn A K Chowdhry, L.M.S.	409
Liver Chill as a Factor of Disease in the Tropics By Major A E Grant, I.M.S.	411
Malaria As seen in the Andamans Penal Settlement By Capt Ernest E Waters, M.B. (Edin.), I.M.S.	419, 444
The Biological Disposal of Sewage By Capt E C Macleod	441
The Health of the District of Jessore, and how to improve it By H Sen, M.B.	448

A MIRROR OF HOSPITAL PRACTICE —

Utility of Saline Injections in Hæmorrhage By Asst-Surgn B K Chaudhuri, L.M.S.	19
Case of Hernia of the Brain By Hosptl.-Asst B M Pubolitt	20
A Case of Hernia of the Bladder associated with Inguinal Hernia of the same side By W J Wanless, M.D.	56
Two Rapidly Fatal Cases of Enteric Fever with marked Pneumonic symptoms from the onset By Major K Prasad, M.B., I.M.S.	57
Notes on a Case of Congenital Absence of both Eyeballs By Major P Carr-White, M.B., I.M.S.	58
Notes on Two Cases of Cæsarean Section (Ponzo's Modification) By Anna L Church, M.D.	59
Serum Treatment of Traumatic Tetanus A Successful Case By Feroz Din Mohroof	59
Cold Water <i>versus</i> Drugs By Capt W G Pridmore, I.M.S.	96
Enteric Fever in Gooikhas with a few Remarks as to its Propagation and Differential Diagnosis in the Early Stage By Lieut R McCannison, M.B., B.Ch., I.M.S.	98
A Case of "Blastomycetic Dermatitis" in a Chitrali By Lieut R McCannison, M.B., B.Ch., I.M.S.	138
Imambarah Hospital, Hughli Notes on some Surgical Cases By Lieut-Col D G Crawford, M.B., I.M.S.	170
Successful Operation for Cerebral Abscess By Asst-Surgn S C Banerjee	172
Cerebro-Spinal Meningitis in Burma By Capt C C Barry, I.M.S.	173
A Case of Cut Throat By Asst-Surgn Feroz Din Mohroof	174
Notes from Continental Eye Clinics By Capt R H Elliot, F.R.C.S., I.M.S.	68, 107, 152, 175, 373,
	462
A Case of Excision of the Os Calcis By Major D M Mon, M.A., M.D., I.M.S.	179
Note on the Prevalence of Elephantiasis, Filariasis, and Hydrocele, amongst Prisoners in the Cuttack District Jail By Major J T Calvert M.B. (Lond.), D.P.H., I.M.S.	180
Two Cases of Spina Bifida Operation, Recovery By W J Wanless, M.D.	217
A Case of Insular or Disseminate Sclerosis By Asst-Surgn Guru Prosad Mitra, M.B.	218

A MIRROR OF HOSPITAL PRACTICE—*Concluded*

	<i>Page</i>
Case of Detachment of Odontoid Process of Axis with Fracture of Atlas By Lieut L B Scott, B A, M B (Camb), I M S	218
Case of Depressed Fracture of Skull, with removal of Brain Matter and Recovery By Asst-Surgn Ambica Chaman Dutta	220
Case of Strangulated Inguinal Hernia Perforation of the Bowel Resection of seven inches of Gangrenous Gut Recovery By Lieut-Col W H Burke, B A, M B, B Ch, I M S	251
Ligature of the Right Common Iliac Artery for Diffused Iliac Aneurism By Major F P Maynard, M B, F R C S (Eng), I M S	253
A Case of Ligature of the External Iliac Artery for Femoral Aneurism By Ernest W Lewis, M B, Ch B	255
Two Cases of Rupture of the Lung of Uncertain Origin By Capt E E Waters, M B, I M S	256
Notes on the Mercuial Treatment of Chronic Dysentery, Cholera and Liver Complaints By Hem Chandra Sen, M D	258
Note on an Abnormality of the Radial Artery By Lieut Godfrey Charles, I M S	259
Case of Meckel's Diverticulum By Major D M Mon, M A, M D, I M S	260
Ascari Lumbricoides causing Perforation of Stomach and Intestine, and Death By Major R H Castor, I M S	295
Poisoning by Thevetia Nerifolia (Yellow Oleander) By Mily Asst-Surgn F D Daley	296
A Case of Spontaneous Dislocation of the Head of the Radius during Sleep By Asst-Surgn R K Gupta, I M S, M R A S	297
A Case of Hydrophobia of Unascertained Origin By Major K Prasad, M B, I M S	297
A Case of Lympho-Sarcoma of the Small Intestine By Capt John Mulvany, I M S	298
Fracture of the Leg Mal-union Operation Successful Result By Asst-Surgn B N Basu	299
A Case of Tetanus treated with Tetanus Antitoxin Recovery By Capt W G Pridmore, I M S	299
Infant with a Caudal Appendage By Capt B R Chatterton, I M S	300
Foreign Body in the Stomach Gastrotomy Recovery By Major J T Calvert, M B (Lond), D P H (Camb), I M S	335
A Case of Tetanus treated with Tetanus Antitoxin Recovery By Capt E F Gordon-Tucker, I M S	336
A Case of Stone impacted in the Ureter Operation Recovery By W J Wanless, M D	338
A Case of Freyer's Operation for Enlargement of the Prostate By Major F P Maynard, M B, F R C S, I M S	371
A Case of Death from Septic Duodenitis after Relief of Acute Intestinal Obstruction By Arthur Neve, F R C S E	375
Note on an Unusual Complication met with during Operation for Punctured Wound of Abdomen By Lieut Percival Mackie, F R C S (Eng), I M S	376
A Unique Pig-sticking Accident By Capt James D Graham, I M S	376
Appendicitis with Abscess By Capt J G Murray, M B, I M S	377
A Case of Colloid Carcinoma of the Mesentery By W J Wanless, M D	377
Old Unreduced Posterior Dislocation of the Bones of the Forearm Excision of the Elbow Joint By Major D M Mon, M A, M D, I M S	378
A Case of Elephantiasis of the Scrotum operated on in the Civil Hospital, Aden By Capt H M Moore, I M S	380
An Attack of Gall-Stones Collapse Death By Major J T. Calvert, M B (Lond), D P H (Camb), I M S	413
The Life-Span of the Guinea-Worm By Arthur Powell, B A, M Ch	414
Abscess of Ovary presenting all the Signs of Ovarian Cyst By Lt-Col C M Thompson, M B, I M S	415
Four Cases of Menorrhagia successfully treated with Suprarenal Gland Extract By Lieut C C Murison, I M S	416
A Case of Transposition of Viscera recognised during Life Death from Malarial Fever <i>Post-Mortem</i> Total Congenital Absence of Spleen By Lieut R D Saigol, F R C S (Edn), I M S	417
Notes on a Case of Pyelitis due to the Bacillus Coli Communis By Capt D McCay, I M S	451
Suicidal Hanging Deaths from the Secondary Effects By Major J T Calvert, M B (Lond), D P H (Camb), I M S	452
A Case of Suicidal Hanging Death after nine days By Asst-Surgn H N Ghosh, M B	453
A Case of Medico-Legal Interest By Capt F F Elwes, M B (Lond), I M S	453
Cases from the Crosshwaite Hospital, Naini Tal By Major J M Crawford, M B, I M S	454

EDITORIALS —

	<i>Page</i>
Surgeon General Beatson on the Indian Medical Service	21
Indian Medical Service Men in the " Dictionary of National Biography "	23
Annus Medicus, 1902	25
The Inquiry into Lathyrism	61
The D P H and the Medical Services	62
The Cosmopolitan Diseases in the Tropics	101
Colonel Thomas Holborn Hendley, C I E, I M S	141
Mr Jonathan Hutchinson on Leprosy	142
Gleanings from the <i>Atte della Società per gli Studi della Malaria</i> , Vol VIII	144
The Flea as the Missing Link in Plague Infection	181
The Kas-el-Ain Hospital, Cairo	221
Undulant Fever	223
Paraffin Injection for Nasal Deformity	224
Bengal Lunatic Asylums	224
Annual Report of the Sanitary Commissioner with the Government of India, 1901	261
A Medical Directory for Bengal	261
The Bengal Branch of the Countess of Dufferin's Fund	262
Cancer	301
Cancer in Europe	303
Enteric Fever	341
Report on the Punjab Lunatic Asylum for 1902	342
Ennore, B iscombe, Bournemouth	344
Tuberculosis in Calcutta	381
Disposal of City Sewage in India	382
Poisoning by Antimony	383
Diseases of the Liver in India	421
The Treatment of Yellow Fever	422
British Medical Association Meeting, July, 1903	423
Post-Nasal Adenoids and their Treatment in Australia	461
Infantile Paralysis	462
Anchylostomiasis in the United States	462

LONDON LETTER —By Col K McLeod, M D, I M S (Retd)

The Lister Jubilee	62
The Introduction of the Antiseptic System into India	63
Trypanosoma Disease in Man	64
Legislation against Drunkenness	104
The Use of Paraffin in Surgery	104
Another Prize Day at Netley	104
Mr Jonathan Hutchinson's visit to India	104
The Oyster Scare	146
Shellfish Poisoning	147
The Mechanical Destruction of Bacilli	147
The Microbe of Rheumatism	147
Yellow Fever	182
Pathological Exotics	182
Cancer in India	182
Bilharzia Disease in India	225
Moot Points in Bilharziosis	225
A Malaria Combine	225
Time Flies	264
The Seventy-first Annual Meeting of the B M A	264
Trypanosomiasis	264
Leprosy	265
Hospital Sunday	304
The Work of the London Hospitals	305
Cure of Cancer	305
The Journal of the R A M C	345
The Recent Birthday Honours	345
Freyer's Prostatectomies	346

LONDON LETTER—*Concluded.*

	<i>Page</i>
The Cure of Cancer	346
Ventnor	346
The Annual Meeting of the B M A	384
The Tropical Diseases Section	385
Vaccination and Small-pox	385
Antidiphtheritic Inoculation	386
Radio-Activity	425
The Sleeping Sickness of Uganda	426
Physique	426
The Services	427
The R A M College	464
The Indian Medical Service	465
Coldite Eating	466
The Leprosy Discussion at Swansea	466

EDITORIAL NOTES ON CURRENT TOPICS —

The Bactericidal Effects of Human Blood	26
The Royal Society's Malaria Reports	27
The Spleen Test of Malaria	27
The Bengal Medical Library	28
Leprosy as shown in Census Returns	64
The Causes of Blindness in India	65
Deaf Mutism in Bengal	66
Desiccating Plague Germs	66
Pneumonia Mortality and Prophylaxis	67
Chicken-pox not a Disease of Children only	105
Typhoid in the French and German Armies	105
A New Treatment of Beri-Beri	106
The Persistence of Influenza	106
The Post-Graduate College in London	106
The Indian Medical Gazette	147
Intestinal Worms in Bengal	147
Ankylostomiasis in England	148
Food-Poisoning and Epidemic Diarrhoea	149
Inoculation against Malaria	150
Malta Fever in the United States	150
An American Editor on Cataract in India	151
The Robert Harvey Memorial Fund	152, 266, 390
The Kasauli Pasteur Institute Report	183
First Aid in Bites of Rabid Animals	183
The Incubation Period of Rabies	184
Egypt 100 Years ago	184
A Field Service Filter	186
Precautions in Dog-Bite	187
The Late Surgeon Major-General W. R. Rice, I M S	226
Fever Hospitals in Manchester	226
Poisoning in Bengal	227
Tropical Section, B M A Meeting	227
Deaths from Wild Animals in the C P.	227
Venereal Disease in the Army	265
The Discoverer of Salicin	266
Bromide of Ethyl	266
Somnoform	266
Spectacled Americans	266
Methyl Alcohol Poisoning	267
Dispensary Returns of Assam	267
Lunatic Asylums of the C P	267
Bengal Jails	267
Subordinate Medical Service Pensions	267
Burma Branch of the Countess of Dufferin's Fund	268

EDITORIAL NOTES ON CURRENT TOPICS—*Concluded*

	<i>Page</i>
Yellow Fever, Mosquitoes and Ships	306
The Ship's Doctor	306
Drug Habits	307
Living Animals used in Kavinaji Treatment	308
Disinfection	308
Indian Milk Supply	308
Special Number on Diseases of the Liver	346
The Royal Medical and Chirurgical Society	347
The New Hospital for Infectious Diseases in Edinburgh	347
The Mosquito Plant	348
Bilharzia in India	349
Epidemic Pneumonia	... 349
The Dhobi ..	349
Report of the Malaria Expedition to the Gambia, 1902	... 386
Peshawar Medical Society	. 387
The Therapeutics of the People	387
The Early History of Quarantine	387
Instruction for Vaccinators and Midwives	388
Sodium Salicylate in Malarial Fever	388
Corsets	388
Journal of the R A M C	389
Journal of the Military Surgeons of the U S A	390
Opium in the Philippines	466
Compulsory Vaccination in France	467
Impurity of Vaccine Virus	467
Etiology of Bubonic Plague	467
Femoral Thrombosis in Chronic Dysentery	467

REVIEWS AND NOTICES OF BOOKS —

The Practitioners' Guide By J W Carr, T Pickering Pick, and Andrew Duncan	29
Malaria in India By Captain S P James, MB (Lond), IMS	71
The Diseases of Warm Climates By Dr B Scheube Translation by Pauline Falcke	72
A Manual of Surgery for Students and Practitioners By William Rose and Albert Carless	73
Handbook of Practical Anatomy By Asst-Surgn J C Mustafa	74
A Naturalist in Indian Seas By Major A Alcock, MB, LL D, FRS, IMS	110
Physician and Friend. By Alexander Grant, FRCS	111
Nothnagel's Encyclopædia, Variola, Vaccination, &c Edited by Sir J W Mozie	112
A Text-book of Diseases of the Ear By Prof Dr Adam Politzer	113
A Manual of Medicine Edited by W H Allchin, MD, FRCP, FRS (Edin)	115
Practical Details of Cataract Extraction By Major H. Herbert, FRCS, IMS	154
Infants and their Ailments in India By Major D Simpson, MD, IMS	155
Aids to Gynæcology By A S Gabb	155
A Brief History of the Hughli District By Lt-Col D G Crawford, MB, IMS	188
The Management of Children in India By Edward A Buch, MD, IMS (Retd)	188
Constipation By S Sherman Bigg, FRCS E	188
Nothnagel's Encyclopædia, Vol III, Measles, Scarletina, &c	189
Diseases of the Skin By H. Radcliffe Crocker, MD, FRCP	190
Manual of Bacteriology By Muir and Ritchie	191
The Elements of Bacteriological Technique By J W Eyre	191
A Text-book of Surgical Principles and Surgical Diseases of the Face, Mouth and Jaws for Dental Students By H Horace Grant, A.M, MD	191
Tropical Diseases By Patrick Manson, CMG, MD, LL D	227
Elementary Hygiene for Indian Students By Charles H Bedford, MD, DSc	228
A Handbook of Surface Anatomy and Landmarks By Bertram C A Windle, FRS, DSc, MD, MA	229
The International Catalogue of Scientific Literature—Physiology, Part I	229
The International Catalogue of Scientific Literature—Physics, Part I	230
Practical Points in Gynæcology By H Macnaughton Jones, 3rd Ed	230
Manual of Practical Anatomy Vol I By D J Cunningham, M.D, DSc, LL D, DCL, FRS	277

REVIEWS AND NOTICES OF BOOKS—*Concluded*

	<i>Page</i>
Operative Surgery By Herbert W Allingham, F.R.C.S.	278
A Manual of Practical Surgery By Lt-Col C P Lukis, I.M.S.	278
Atlas and Epitome of Otology By Gustav Buhl, M.D.	279
Legal Medicine and Toxicology in India Vol II By Major Collis Bary, F.R.S.E., F.L.C., I.M.S.	309
Chart of Officers of the I.M.S. in Civil Employ By E C Dozey	309
Practical Hints on the Preservation of Health in India By Lt-Col G A Ranking, M.D., M.R.C.S., I.M.S.	310
Public Health Laboratory Work By Henry R Kenwood, M.B., D.P.H., F.R.C.S.	310
Practical Handbook of the Pathology of the Skin By J M Macleod, M.A., M.D., M.R.C.P.	310
Diseases of the Pancreas and their Surgical Treatment By A W Mayo Robson, F.R.C.S., and B G A Moynihan, M.S. (Lond.), F.R.C.S.	311
Malarial Fevers and Malarial Parasites By Major Andrew Buchanan, M.A., M.D., I.M.S. 2nd Ed	349
Sanitation of Mofussil Bazaars By G W Disney 2nd Ed	350
A Manual of Plague By W E Jennings, M.B., C.M., I.M.S.	351
Manual of Medicine By Thomas Kirkpatrick Monro, M.A., M.D.	353
The Geography of Disease By Frank G Clemow, M.D., D.P.H.	354
Diseases of the Skin By Henry W Stelwagon, M.D.	355
Die Krankheiten der Warmen Lande By Dr B Scheube	390
Protozoa and Disease Part I By J Jackson Clarke	391
An Atlas of Illustrations of Clinical Medicine, Surgery and Pathology New Sydenham Society Xanthelasma, Xanthoma, and Diseases of the Liver	392
An Atlas of Illustrations of Clinical Medicine, Surgery and Pathology New Sydenham Society Framboesial Syphilis	432
Elementary Bacteriology By M L Dhingra, M.D., C.M.	433
The Symptoms and Pathology of Plague By Capt E F Gordon-Tucker, I.M.S.	475
Travelling Allowance Chart By E C Dozey	476
Aids to Physiology By Peyton T B Beale, F.R.C.S.	476
Studies in the Psychology of Sex By Havelock Ellis	476
Materia Medica of India and Their Therapeutics 2 vols By R N Khory and N N Katrak	476
An Atlas of Illustrations of Clinical Medicine, Surgery and Pathology New Sydenham Society Coxa Vara	477
A Handbook of the Diseases of the Eye and Their Treatment By H R Swanzy, A.M., M.B., F.R.C.S.I.	477

ILLUSTRATIONS—

Writers' Buildings, Calcutta, 1798, with Holwell's Memorial	1
Plan of Fort William and Part of Calcutta, 1753	3
Plan of the Hoogly River, 1785	51
Leprosy Map of Bengal	65
A Convenient Substitute for the Bath	97
Enteric Fever Charts	101
Diagram of a Perimeter Room	107
Thoiner's Ophthalmoscope	108
Epidiascope	109
M'Keown's Irrigator	122, 123, 124, 125
Chart for Malignant Disease	127
Cholera Chart	135
Blastomycetic Dermatitis	138, 139
Wilbrand's Eye Syringe	153
Ophthalmometer	178
Result after Excision of Os Calcis	180
Chronic Arthritis following Chancroid	207
Peripheral Neuritis following Chancroid	209
Fracture of Atlas Vertebra	219
Wing of Anopheles Fuliginosus	248
Excised portion of Gangrenous Gut	252

ILLUSTRATIONS—*Concluded*

	<i>Page</i>
Diffused Aneurism of the Right Common Iliac Artery	253
Aneurism of the Right External Iliac Artery	255, 256
Abnormal Radial Artery, Left Forearm	259
A New Field-Service Dooly	281
Thornton's Desiccator	311
Sawhney's Desiccator	312
An Enlarged Prostate Excised	372
Skiagram of an Unreduced Posterior Dislocation of the Right Elbow	379
Primary Carcinoma of the Liver	405
Ovarian Abscess	415
Transposition of the Viscera	420, 421
Diagram of Vertical Section of an Installation for the Biological Disposal of Sewage	444
Ascher's Transparent Perimeter	457
Volkman's Magnet	457
Axenfeld's Speculum	459
Müller's Speculum	459
Diagram of Isolation Block	459
Snellen's Operation for Wounds of the Ciliary Region and Corneal Border	460
Snellen's Perimeter Chart	460

ANNUAL REPORTS —

ASSAM—Sanitation	394
Vaccination	392
BENGAL—Administration	238
Maritime Trade ..	393
Sanitation	392
Vaccination	393
BOMBAY—Hospitals	195
CENTRAL INDIA AGENCY—Dispensaries, Jails and Vaccination	394
Political Administration	319
JAIPUR—Medical and Meteorological	393
MADRAS—Civil Hospitals and Dispensaries	437
Government Maternity Hospital	437
MIRAJ—Presbyterian Mission Hospital	393
PUNJAB—Sanitation	394
RAJPUTANA—Sanitation, Dispensaries and Jails	319
UNITED PROVINCES—Sanitation	393

CURRENT MEDICAL LITERATURE —

Diseases of Women and Children (J W F Rait)	315, 357, 395, 435
Foreign Journals (W D Sutherland)	76, 194, 195, 230, 359
Geographical Distribution of Stone and Calculous Disorders (Reginald Harrison)	115
Medicine (F J Drury)	313
(Clinton Lane)	394, 433
Medico-Military Tactics (Johann Steiner)	74
Serum-Therapy in Snake-Bite (F Tidswell)	33
Special Senses (F P Maynard)	75, 314, 355, 473
(R H Elliot)	192
Steam in Surgery (A H Nott)	471
Surgery (R Bird)	356, 434, 474
(D M Moir)	192

MEDICAL SOCIETIES —

Association of Military Surgeons in the U S A	316, 396
Bombay Medical and Physical Society	196, 234
Peshawar Medical Society	387

MISCELLANEOUS —

	Page
Antivenene as an Antidote in Sea-Snake Bite By H W Peal, FRS .	276
Army Medical Organisation in the Field	30
Bibliography of Cholera Literature by I M S Officers By Lt-Col D G Crawford, MB, I M S	467
Bibliography of Literature on Diseases of the Liver by I M S Officers By Lt-Col D G Crawford, MB, I M S	427
Desiccator for Plague, Thornton's	311
Desiccator for Plague, Sawhney's	312
Epidemic Plague, Management of By J A Thompson, M D, D P H	469
Poison of the Hydrophidæ On the Physiological Action of—By Capt L Rogers, M D, I M S	269, 428
Recovery without treatment from a Minie Ball Wound through the Stomach	232

CORRESPONDENCE —

The Furlough Pay of Majors, I M S	35
The Dose of Antitoxins By Major P W O'Gorman, I M S	36
A Good Han Dye	36
Scarlet Fever at Rawal Pindi By Lieut H R Nutt, I M S.	233
Hernia of the Bladder By Lieut F W Sumner, I M S	223
Ætiology of Leprosy By Arthur Powel, M C H.	233
Demonstration of Plague Bacilli in Hongkong By J Bell	279
Cataract Operations A Correction By Lt-Col T H Pope, M D, I M S	319
The use of the Catheter after External Urethrotomy By Capt C Barry, I M S, and Capt Duer, I M S	360
A Suggestion for Plague Treatment	360
Ambulatory Plague By J R Williamson, M D	398
Ascaris Lumbricoides By Capt C Duer, I M S	398
A Question of Medical Ethics By Capt J W Cornwall, I M S	436
A possible Cause of Kala Azar By Major C Donovan, I M S	478
The Prize Essay of the Association of Military Surgeons of the United States	478

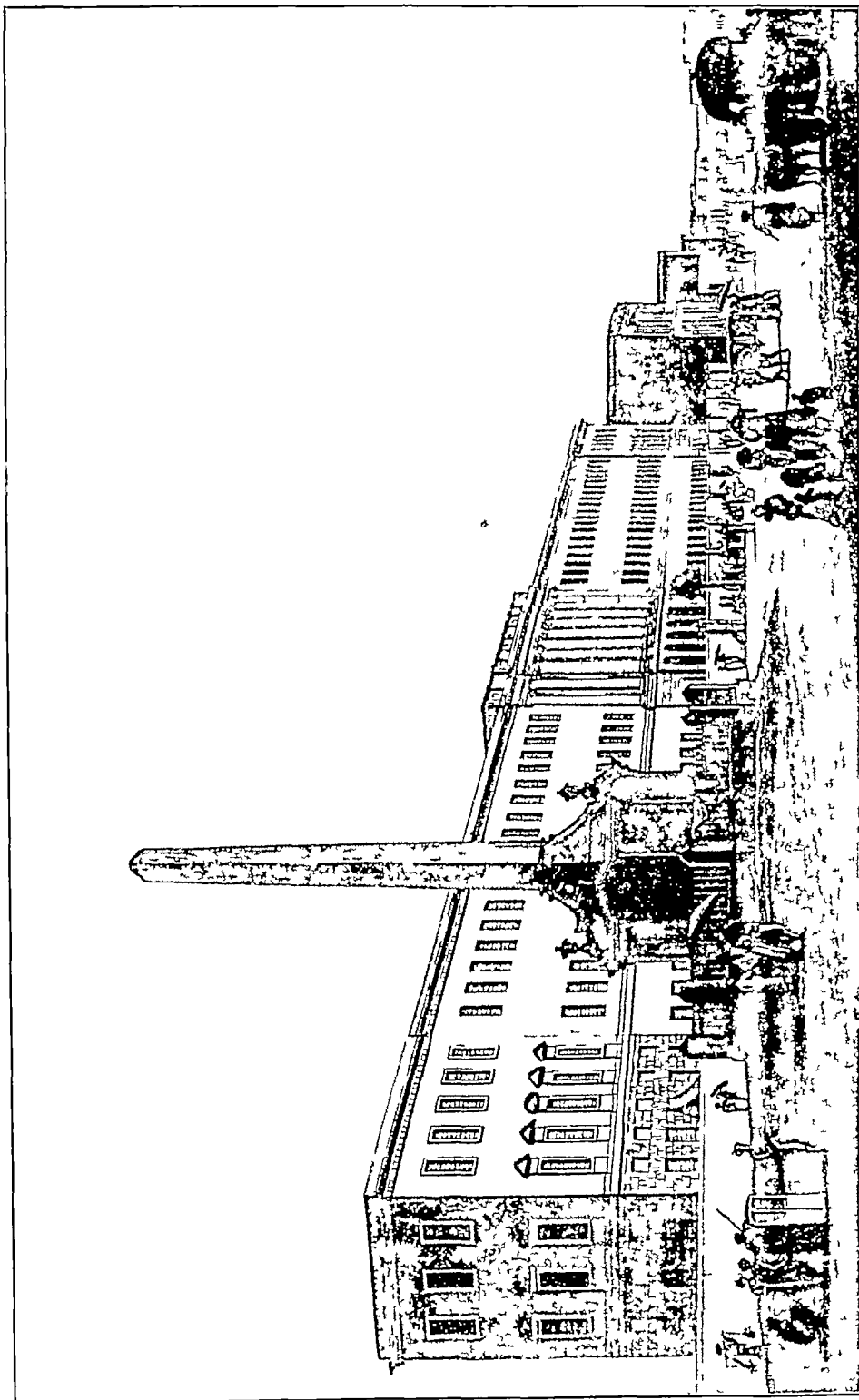
SERVICE NOTES —

36, 78, 118, 156, 197, 238, 279, 319, 398, 437, 478

ACKNOWLEDGMENTS, NOTICES, &c

40, 80, 120, 160, 200, 240, 280, 320, 360, 400,
440, 480*(The Alphabetical Index of Subjects will be issued with the next number)*

THE WRITERS' BUILDINGS, CALCUTTA, 1798, WITH HOLWELL'S MEMORIAL
From Daniell's Oriental Scenery



INSCRIPTION ON THE FRONT OF HOLWELL'S MONUMENT

To the Memory of Ldnd Eyre Wm Baillie Esqrs The Revd Jervas Bellamy, Mefrs Jenks, Reevely, Law, Coates Nalcourt Jebb Torrano, E Page, S Page Grub, Street, Harold P Johnstone, Ballard, N Drake Carse, Knapp, Gosling, Dod Dalrymple, Captains Clayton, Ruchanan Witherington Lieuts Bishop, Hays, Blagg, Simpson, J Bellamy, Ensigns Pacard, Scott Hastings, C Wedderburn, Dumbleton, Sea Captains Hunt Osburn, Purnel Mefrs Carey, Leech, Stevenson, Guy, Porter, Parker, Caulker Bendo! Atkinson, who with sundry other inhabitants Military and Militia to the

number of 123 persons, were by the tyrannic violence of Surajud Dowla Suba of Bengal, suffocated in the Black Hole Prison of Fort William in the night of the 20th day of June 1756, and promiscuously thrown the succeeding morning into the Ditch of the ravain of this place

This Monument is erected by their surviving fellow sufferer J Z Holwell

INSCRIPTION ON THE REVERSE OF THE MONUMENT

This horrid act of violence was as amply as deservedly revenged on Surajud Dowla by His Majesty's Arms, under the conduct of Vice Admiral Watson and Col Clive, Anno 1757

Original Articles.

THE FIRST TWO HOSPITALS IN CALCUTTA

By O R WILSON, M A, D LITT,

Offg Officer in charge of the Records of the Government of India

THE FIRST HOSPITAL

THE first hospital in Calcutta was situated in what is now called Garstin's Place. The present Foreign Office is built on what was probably part of the hospital compound, but the hospital buildings lay a little more to the north. Adjoining the hospital compound on the south was the powder magazine, a round sort of tower with a dome-shaped top, which stood in the eastern portion of what is now St John's churchyard. The western part of the churchyard was the burying ground. West of the hospital and partly separating it from the burying ground was a large tank, extending as far as the modern Hare Street. But in those days there was as yet no Hare Street, and no buildings intervened between the north face of the hospital and the south-east corner of the old fort in what is now Konlah Ghat Street. The main building seems to have been about 175 feet long and 60 feet wide. It had at first no upper storey.

This hospital was erected in 1707 for the benefit of the Company's soldiers and sailors, who every year fell sick and died in large numbers for want of proper attendance. After frequent representations had been made by the doctors, the Council,¹ on the 16th October, agreed that a convenient spot should be pitched on as the site of a hospital, and contributed two thousand rupees towards the building expenses. The rest of the money was raised by public subscription. Of this institution Captain Alexander Hamilton has expressed a qualified approbation. 'The Company,' he says, 'has a pretty good hospital at Calcutta, where many go in to undergo the penance of physic, but few come out again to give account of its operation.'²

In 1710, in order to put a stop to the unwholesome practice of allowing the soldiers to lodge in the town, the hospital was walled round and barracks erected for them to live in under the supervision of their officers.³ Before the erection of the barracks the ground lay open both north and south of the hospital. The barracks closed in the north, east and west sides. On the south there was still nothing but the round powder-magazine.

The hospital regulations are recorded in the Consultations of August 20, 1713, and of Decem-

ber 6, 1716,¹ the first set being signed by the

W Hamilton

famous surgeon William Hamilton and his colleague, Richard Harvey. From them it appears that provision was made for twenty or at most thirty patients. All unmarried soldiers were obliged to go into hospital when ill. The charges were four annas a day for a private, six for a corporal, and eight for a sergeant. These measures met with the cordial approval of the Court of Directors.²

In 1730 a survey was made of the hospital, and the beams and wood-work generally were reported to be quite rotten and in need of immediate repair. This was done at the cost of Rs 1,020-7-6.³

In 1736, in order that one of the doctors might reside at the hospital, a couple of upper rooms and a shop for medicines were built at one end of the hospital.⁴ These were finished in February 1736. The cost may have been about Rs 4,000.⁵ In the same year further repairs were carried out at the cost of nearly Rs 700.⁶

In 1749, the buildings known as the Company's stables were ordered to be converted into barracks,⁷ but it does not appear whether this was ever done, or whether the older barracks built round the hospital were given up.

Although doctors and medicines were provided by the Company, and the cost of diet was supposed to be covered by the payments made by the patients, yet the monthly contingent expenditure of the hospital was often suspiciously

¹ See the Consultations of these dates given in the *English in Bengal*, vol II, pt. I, pp 137, 138, and 257.

² See the following extracts from the letters from the Court to Bengal —

'We are glad to find the care taken for the sick souldiers as the same is enter'd in your Consultation of the 20th August for regulating the Hospital which do you at fit times enquire about to see if it be continued, and whenever you find any failure rectify it and remember the saving the life of but one man is worth the pains of his greatest superiour' (*Letter from Court, Jan 12, 1715, par 107*)

'We find in Consultation of the 6th Decr what care you took for the souldiers when sick as to necessarys and that you appointed a steward to look after them in the Hospital which was very humane and commendable. Para 130 of the Letter of the 27th complains that some of the souldiers died because they would not come into the Hospital where due care was taken but remained in obscure places with their landlady's, surely their officers ought to remedy this, and you should censure them for not doing it' (*Letter from Court Jan 8, 1718, par 69*)

³ See the Consultations of May 11, 1730, and of July 12, 1731.

⁴ See Consultation of March 26, 1735.

⁵ I have notes of the payments for August, December, January and February, in the Consultations of October 9, 1735 and April 12 1736, amounting to Rs 1,359 1 6. We get a rough idea of the total cost by doubling or trebling this amount according as we suppose the building began in April, or in August, 1735.

⁶ Payments for repairs are recorded in the Consultations of May 27, July 16, and August 1, 1736.

⁷ See Consultation of March 30, 1749.

¹ See the Consultation of that date given in *Early Annals of the English in Bengal*, vol I, p 287. See also at p 214.

² Hamilton's *East Indies*, vol II, p 11.

³ See Consultation of February 13, 1710, given in the *English in Bengal*, vol I, p 327.

high,¹ and in 1752 the Court of Directors with a view to the better regulation of the hospital ordered a member of the Council in turn to inspect the place every week and report to the Board.² Mr Frankland, visiting the hospital in September, found the surgeons in attendance, but observing the building much out of repair he desired Mr Plaistead to survey it.³ The report of the survey, dated the 27th October,⁴ gives us our last view of this hospital. There could be no doubt that it was much out of repair, 'notwithstanding that we have had continually people there at work of all kinds. I apprehend therefore and do with submission give it to the Board as opinion that instead of this patchwork if we set a number of people to work and give it a thorough repair at once it will be more for the Company's interest, and at the same time more conducive to the people's health, and as the doctors are of opinion that *tuckposts* for every room made to take out at pleasure will be a great preservative as all lower rooms are very damp, so I readily join in their judgment of the utility of the same.'

Apparently this hospital was destroyed at the taking of Calcutta in 1756 by Shaj-ud-daulah.

THE SECOND HOSPITAL IN CALCUTTA

The second hospital was a temporary building erected inside the old fort on the recovery of Calcutta. Ives has furnished statistics for the year 1757. 'Between February 8th and August 8th of that year, 1,140 patients recovered, of those, 54 were for scurvy, 302 bilious fevers, and 56 bilious colic, 52 men buried. Between 7th August and 7th November 717 fresh patients were taken in, of those, 147 were in putrid fevers, and 155 in putrid fluxes, 101 were buried.'

This hospital seems to have been carelessly managed like many other things at that time. In 1760, the surgeon's mates were living in an unboarded room on the ground-floor.⁵ The bedding and linen were so flimsy that they

soon went to pieces. 'They were supplied by Mr Gray's *banian*, and no account was kept of them by the hospital steward.' On the 10th March the Council ordered¹ 'that in future the hospital be visited monthly by some of the members of the Board to see if the sick have proper necessaries and care taken of them, and that they report the same to the Board. In order to curtail 'the extravagant expenses of the hospital,' Mr Smyth, 'the present visitor,' was directed, on the 20th March,² to inquire into the state and reality of the charges of mismanagement. In future the surgeons were forbidden to purchase any necessaries for the hospital without the express permission of the military paymaster. How far these orders produced any effect is not clear. In the following August Dr Fullerton presented a bill for Rs 4,152-14-6 for necessaries for the hospital, which the paymaster was ordered to pay.³ In the same month the surgeons represented to the Council that they were not able to diet the sick military in the hospital at six rupees a month, and were given an additional allowance of two rupees a month for each man.⁴ In August 1761 the surgeons presented a bill of clothing for the use of the sick in the hospital amounting to Rs 5,358-12-0, which was passed and paid.⁵

In October, 1762, it is stated that great inconvenience was felt owing to want of room in the hospitals and from not having the benefit of a free and open air. As a temporary measure the Council agreed to build a hospital near Surman's gardens, that is, Kidderpore,⁶ 'with fell trees and covered with straw, under the direction of Captain Green, upon the same construction with those he has built at Ghyiatty, which are found to be extremely good and wholesome lodgings.'

When the old fort was converted into a custom house, it became absolutely necessary to build a new hospital. The Council, accordingly, 'taking into consideration the great inconvenience attending the want of a proper hospital for the military, the present one being only a temporary building in the old fort destitute of proper accommodations' judged it expedient that a commodious one be erected as soon as possible. The civil architect was ordered to point out a proper spot for a hospital to be built upon, and at the same time to deliver in a plan of one with an estimate of the expense.⁷ The history of this third hospital in Calcutta is too long and important to be brought within the scope of this brief article. It will form another story.

¹ See the following extracts from the Letters from the Court to Bengal.

'Doctors' Stores expended, Rupees seventeen hundred and thirty nine. This we take to be the Invoice charge of the Medicines sent from hence, as the same are delivered out to them, and they have made use of, but there is reason to apprehend the quantity larger than is really used by the Covenant Servants, Military and others, when it is withal considered that there is a large monthly expense allowed them besides as appears by the books, therefore don't think it below you to examine said accounts with care' (*Letter from Court, January 29th, 1724, par 78*).

'You tell us the Doctors' Expenses of Medicines which we took notice of as amounting to Rupees seventeen hundred and thirty nine are only expended in the Company's Service as upon examining appears. If so we acquiesce, but you mention not one word of the large monthly allowances which we then hinted at. It would have pleased Us better to have received the Account plainly and fully expressed, for several perquisites have of late years been allowed of through connivance and by particular Solicitations beyond Our stated rules, which we ought to know and Our leave askt whether there should be continued or shall hereafter' (*Letter from Court, January 17 1726, par 11*).

² See Letter from the Court to Bengal of January 8, 1752.

³ See the minutes of the Consultation of October 27, 1752.

⁴ Given at the end of the same Consultation.

⁵ See Consultation of March 27th.

¹ See Consultation of that date.

² See Consultation of that date.

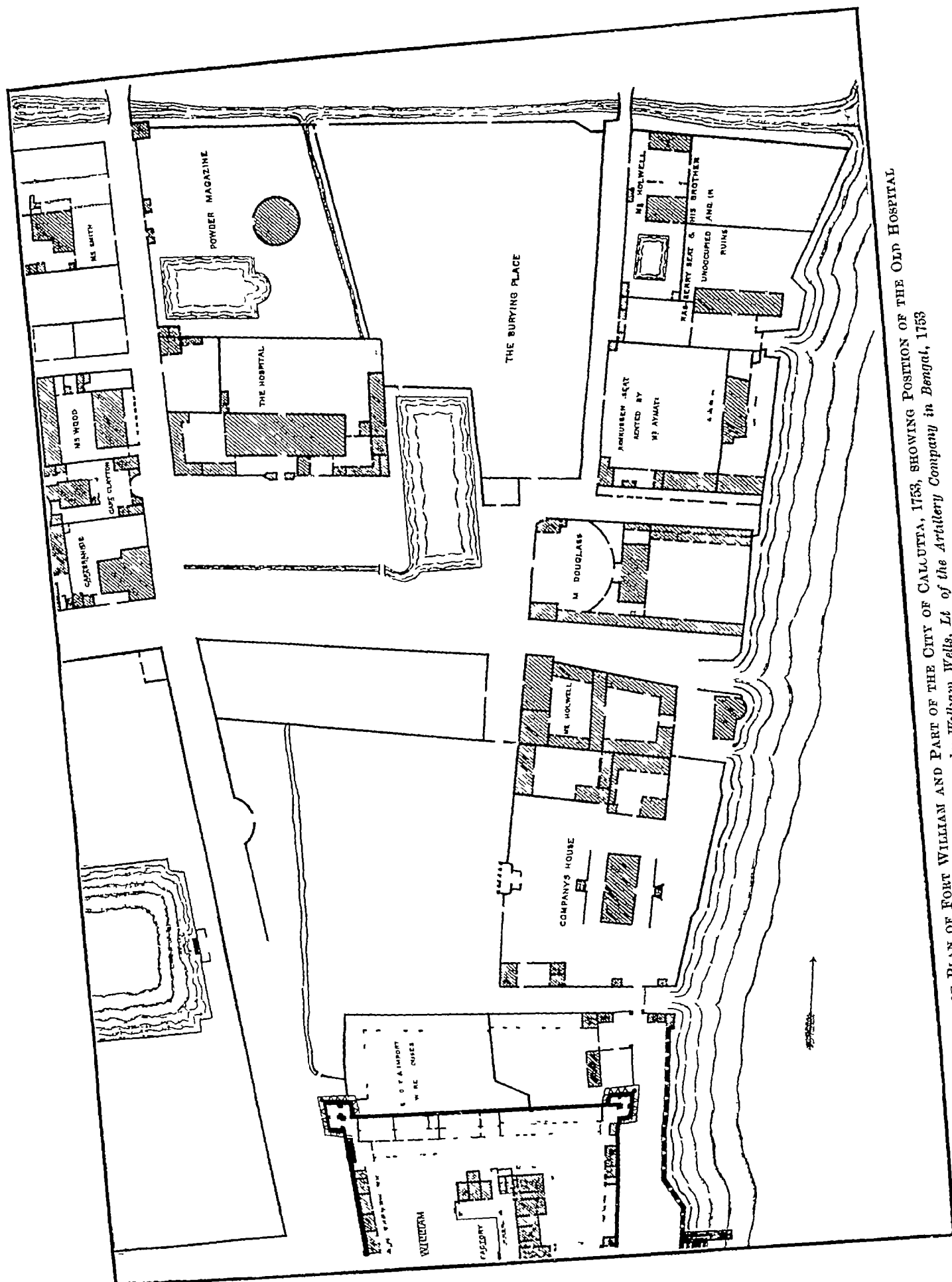
³ See Consultation of August 4, 1760.

⁴ See Consultation of August 7, 1760.

⁵ See Consultation of August 24, 1761.

⁶ See Consultation of October 11, 1762.

⁷ See Consultation of September 29, 1766. The Consultation of September 22 has some curious regulations about venereal cases.



SECTION OF PLAN OF FORT WILLIAM AND PART OF THE CITY OF CALCUTTA, 1753, SHOWING POSITION OF THE OLD HOSPITAL
Surveyed and drawn by William Wells, Lt of the Artillery Company in Bengal, 1753

NOTES ON THE EARLY HOSPITALS OF CALCUTTA

BY D G CRAWFORD, M B,

LIEUT COLONEL, I M S,

Civil Surgeon, Hughli

THE following notes on the early hospitals of Calcutta are taken from various books, chiefly selections from old records, and from the *Calcutta Gazette* of the last twenty years of the eighteenth century. To judge from the extracts quoted, the first Calcutta hospital, that of 1707, appears to have been a General Hospital for Europeans. There certainly was not in the Company's service in Calcutta at that time a force of European soldiers sufficient to make it necessary to keep up a hospital for their special benefit. The notes about hospitals in the middle of the eighteenth century appear, on the other hand, to refer to institutions which were, primarily at least, military hospitals for European soldiers. Special hospitals for sepoys are first heard of about 1760, shortly after the capture of Calcutta by Siraj-al-Daulat in 1756, and the subsequent wars with the Nawabs of Bengal and the Dutch, when the Company first began to keep up any considerable sepoy force. The first general native hospital, for natives not in the service of Government, appears in 1792. A few years earlier, the *Calcutta Gazette* of 14th May 1789 contains a letter signed by "a sepoy officer," suggesting that officers' servants should be admitted into hospitals for sepoys, their masters being responsible for their diet stoppages. This native hospital of 1792 was the precursor of the present Medical College Hospital. In 1814 a lying-in-hospital was started in Park Street.

The first Calcutta hospital was founded in 1707 or 1708. In October 1707 the Council of Fort William resolved to build a hospital, selecting as site "a convenient spot close to the burial ground." The Company contributed Rs 2,000, the rest of the money was raised by public subscription.¹ The burial ground here mentioned filled the space now occupied by St John's Church, with the grounds attached, in which a few of the principal tombs may still be seen, notably the mausoleum of Job Charnock. The hospital was on the north side of this ground, between it and old Fort William.

Captain Alexander Hamilton, a sailor who wrote an account of his travels in the East, under the title of "A New Account of the East Indies," published in two volumes in 1744, thus describes the Calcutta Hospital at the time of his stay in the town, about 1708, as follows — "The Company has a pretty good hospital at Calcutta, where many go in to undergo the

penance of physic, but few come out¹ give an account of its operation" (Vol II, p 9).

Hamilton also (Vol II, p 6) describes the mortality in Calcutta in the first decade of the eighteenth century. "One year I was there, and there were reckoned in August about 1,200 English, some military, some servants of the Company, some private merchants residing in the town, and some seamen belonging to shipping lying at the town, and before the beginning of January there were 460 burials registered in the clerk's book of mortality."

The convenience to the hospital of having the burial ground close by is obvious, but it would hardly be put so bluntly now-a-days in an official order.

Wilson (Vol II, pp 138, 139) gives the Hospital Regulations, as recorded in the Consultations of 20th August 1713 and 6th December 1716. The former were drawn up by the surgeons, and refer chiefly to discipline, the latter to the cost of maintenance, and its apportionment between the Government and the patients, who seem to have been chiefly, if not entirely, soldiers in the Company's service.

Hospital Regulations, 20th August 1713

"The doctors belonging to this place delivered us the following articles for regulating the Hospital, vizt —

1st The Hon'ble United Company will supply the Hospital with 30 cots and bedding, 20 Gowns, and 20 Pieces Gurrahs.

2nd That all the soldiers unmarried'd be obliged to repair to the Hospital when sick.

3rd That every soldier pay 4 annoes per day whilst sick in the Hospital for his maintenance, every Corporall six, and a Sergeant half a rupee.

4th That a centry be kept to secure the sick from going abroad till admitted by the Surgeon, and to hinder all Strong Liqueurs being brought in.

5 That the Steward have all the cloths under his charge and to supply them with all necessarys after the abovementioned gift, his wages 30 rupees per month out of which to pay for firewood, oyl, &c.

6 To provide 6 brass Potts, 6 Sancepans, 12 Pouringers, 1 Conge off Pewter Plates with twenty spoons."

(Sd) WM HAMILTON

(..) RICHD HARVEY

Hospital Regulations of 6th December 1716

"Regulations agreed on for the Hospital, at the Company's charge.

Medicines out of the stores bought in the Bazar, by Prescription of the Doctors.

Cotts for the Sick.

Cloths for Raggs.

Wood, Charcoal, Potts and Pans, and what else shall be necessary.

¹ Wilson "Early Annals of the English in Bengal, Vol I, 1895, Vol II, Part I, 1900 (Vol I, p 214).

¹ Sic, word to omitted

Six Hariys¹ during the sickly season, and four afterwards

Two washermen

Dy et of sick men, candles and oil to be made good to the Steward out of the soldier's pay monthly at the Pay Table and no other deduction to be made before he is paid, which expence not to exceed four annas a day for each man

All utensils and necessaries belonging to the Hospital to be under the Steward's care, and he to be answerable for them

Agreed that Richard Warren be Steward upon likeinge and to lodge in the Hospital and be continued in case he behave himself well and diligent and honest in that office and that he be allowed ten rupees per month for his Dy et during his continuing in it besides the wages fifteen rupees per month already allowed for the service he does as Cooper "

Wilson also gives (Vol II, pp 239—262) a series of accounts for the year 1716-17, in which appear many medical items. The repairs of the hospital and of the Doctors' quarters recur frequently, as well as a good deal of expenditure on drains. In this one year the repairs of the Doctor's quarters cost Rs 494-0-5, and those of the "Doctors' shop" Rs 757-13-9, large sums, considering the value of money then, to be spent in this way in a single year. One would have thought that it would have been cheaper to provide decent buildings once for all. The surgeons then drew £36, or 288 rupees, each, as a year's salary, so the repair of their lodgings cost nearly as much as the pay of the two surgeons for the whole year.

The sum spent on the drains is also large, and amounts to no less than Rs 1,917 for the year, chiefly made up by four large entries, of Rs 220, 372, 227, and 1,098. There is also an entry of Rs 9-2-9 for "filling up nasty holes." This expenditure shows that our forefathers had some ideas on the subject of sanitation. Drains were then, as now, an ever-recurring source of expense. A despatch to Court, of 13th January 1749, para 12, quoted by Long,² page 21, runs as follows: "The same day we ordered the zemindar to survey the drains about the town, and see what repairs they wanted, and lay his report with an estimate of the expense before us. He complied therewith the 15th November, as by said report entered after our consultation of that day, when we ordered him to put the same in execution, as this was the most effectual method we could think of for making the settlement sweet and wholesome."

In 1752 we find the doctors applying for beds for the hospital (Long, p 36), Consultations 27th October 1752. Mr Plaisteed, member of

Council visiting in rotation to hospital, reports "The Doctors are of opinion that Tuckposts for every room, made to take out at pleasure, will be a great preservation, as all lower rooms are very damp." "Tuckpost," of course, means *tukhtaposh*, the ordinary low quadrangular wooden bed, in common use in native houses. The Hospital Regulations of 1713 show that cot were then provided for the sick. How these differed from the beds now wanted I cannot say, possibly the cot was a swung hammock, or a fixed bunk, like those on board ships. It can hardly be supposed that the sick slept on the damp floor. The hospital was a two storey building, the surgeon's mates lived in an un-boarded room on the ground floor.

Orders were formally passed on 3rd March 1758, and again on 10th March 1760, that the members of Council should take it in turns to pay a weekly visit to the hospital, and report on its condition (Long, pp 187 and 207.) But the previous note shows that such a practice had been in force several years earlier.

In the Council Proceedings of 10th March 1760 was considered the report of a Committee on the extravagant expenditure of the hospital. Among its resolutions was one to the effect that "The Surgeons be forbid purchasing any necessaries for the hospital without the express permission of the Buxey."¹ Apparently this resolution of the Committee had not much effect in promoting economy and reducing expenditure, for in August 1760 the Buxey was ordered to pay a bill for Rs 4,152-14-6 sent in by Dr Fullerton, and the Proceedings of 24th August 1761 order payment of a bill sent in by the Surgeons of the hospital for Rs 5,358-12-0, for clothing for the sick.

In the Proceedings of 8th October 1757 is given a list of the value of the buildings of Calcutta in January 1757. The hospital is valued at Rs 12,000 (Long, p 167).

The rates for dieting the sick were raised in the Proceedings of 7th August 1760. "The Surgeons representing to the Board that they are not able to diet the sick military in the hospital at the rate of six rupees per month, and laying before us a statement of the same, agreed they be made an additional allowance of Rs two per month for each man (Long, p 218).

In 1762 it was resolved to build a temporary hospital at Kidderpore ("Surman's"), pending the erection of a new hospital in new Fort William (Proceedings,) 11th October 1762. "Finding great inconvenience for want of room in our hospitals and from not having the benefit of a free and open air, agreed, till such time as the hospital can be built in the new Fort, that we build one near to Surman's with fell trees and covered with straw, under the direction of Captain Green, upon the same construction with those

¹ Harry, i.e., *Haris*, sweepers

² Selections from the unpublished records of the Government for the years 1748 to 1767 inclusive. By Rev J Long, Calcutta, Superintendent of Government Printing, 1869

¹ Buxey, *Bakshi*, paymaster

he has built at Ghyetty, which are found to be extremely good and wholesome lodgings" (Long, p 280)

The Proceedings of 28th May 1763 note the purchase of medicines "The Surgeons send in a bill for two chests of medicines purchased by them for the use of the hospital amounting to Company's Rs 2,783-1-6 Likewise one for dieting the people of the Walpole in the hospital for two months amounting to Sonat Rs 212-5-4" (Long, p 318) In 1765 (Persian Department, No 80 of 27th December 1765, Long, p 422) an allowance of rupees 18 per patient per month was made to the surgeons, out of which they had to defray all miscellaneous charges connected with the hospital "The Surgeons are in future to be allowed Rs 18 per mensem for each sick man lodged in the hospitals, which allowance shall stand in lieu of all charges for coolies, carriage, black assistants, bazar medicines, &c, &c, and it is hereby understood that every expense shall be defrayed by the Surgeon, whether in Garrison or in the Field, the erecting of hospitals, providing cloaths, furnishing Europe medicines, and providing diet excepted, for which last article they are to draw from the soldiers' pay in the usual manner" This order is also referred to by Browne, in his History of the Bengal Army¹ He states that this contract for contingencies was given to the Surgeons at the suggestion of Lord Clive, and that it was at the rate of 18 *shillings* a head for each European "more than double the sum at present allowed" (p 546) The date of this work is 1850, and that year presumably is the time alluded to as "at present"

In the Proceedings of 22nd September 1766, the Board order that larger deductions, Rs 5 instead of Rs 3, should be made from the pay of men admitted for venereal diseases, and fix the following scale on which Army Surgeons shall be paid for victualling the sick (Long, pp 454-5)

	IN GARRISON		IN THE FIELD	
	Common distempers.	Venereal	Common distempers	Venereal
From the Company	10	5	8	3
From the Contractors	5	5	10	10
From the Soldiers	3	5	3	5
TOTAL	18	15	21	18

In the Proceedings of 29th September 1766 it was decided that a new hospital should be built and a new burial ground selected "Agreed

that a new hospital should be built, and that the present burying ground, which is very detrimental to the health of the inhabitants, being situate in the middle of the town and too much confined, should be closed, the Civil architect to choose sites for new hospital and burial ground Ordered also that the Ditch round the old Fort, which has lately been converted into a Custom House and Cotal, be filled up" The burial ground now closed was the old one where St John's Church now stands, it contained the bodies of all Europeans who had died in Calcutta since 1698 (probably about 12,000), except those who died in the Black Hole, then bodies were flung into the ditch of the Old Fort (Long, p 456)

In the same year, the Proceedings of 27th October 1766 contain the following remarks "We express our apprehensions that the Surgeons of the army will find their account in encouraging the men to plead sickness in order to be received into the Hospital, and that we must therefore depend upon the vigilance of those officers who visit the sick to prevent this evil" (Long, p 459)

Twice in 1767 the Council sent home urgent appeals to the Court of Directors at home for more medicines In a letter to Court, dated 14th September 1767, they state that the great mortality, both in Calcutta and in the Army, is in part due to want of medicines The Proceedings of 10th December 1767 again state the urgent necessity for more medicines, and then great cost if purchased from private persons "Near 5,000 Europeans partake yearly of the Honble Co's medicines, besides sepoys and other black people in their service" (Long, pp 488, 514)

The first letter of 14th September 1767 in reporting the great mortality of the past hot season, both in Calcutta and all over the country, states that in Calcutta a chaplain, a junior merchant, a factor, and ten writers died during the hot weather As an instance of the mortality of Bengal in the middle of the seventeenth century, it may be mentioned that Ives (p 180), in noticing the death of Major Kilpatrick in October 1757, states that of his command of 250 soldiers, who came with him from Madras to Fulta, in August 1756, after the capture of Calcutta, only five survived then commanding officer This detachment, however, had, in the intervening 14 months, been through the attacks on and capture of Calcutta, Hughli, and Chandannagar the battle of Plassey, and the pursuit of M Law, and the French to Benares¹

¹ A voyage from England to India in the year 1754, and an Historical Narrative of the operations of the Squadron and Army in India under the command of Vice Admiral Watson and Colonel Clive in the years 1755 1756, and 1757 By Edward Ives, formerly Surgeon of Admiral Watson's ship (This book contains a good account of the capture of Chandannagar, at which the author was present) London, 1773

¹ History of the Rise and Progress of the Bengal Army, by Captain Arthur Browne, Bengal Artillery Calcutta W Thacker & Co, London Smith Elder and Co, 1850

Although somewhat foreign to our present subject, it may be of interest to give particulars as to the medical staff allowed for the Army, as it stood in August 1765 (Bloome, p 533 *et seq*). The Army was then divided into three Brigades, the first was stationed at Monghyr, furnishing details to the Presidency, Muirshidabad, and several smaller stations, the second at Allahabad, and the third at Patna. Each Brigade consisted of one company of Artillery, one Regiment of European Infantry, one *Risala* of native Cavalry, and seven Battalions of Sepoys. Each European regiment had one Surgeon and three Surgeon's mates, each company of Artillery had one Surgeon's mate, each sepoy battalion had three Native Doctors, while in the staff of the whole seven sepoy battalions of each brigade were included one Surgeon and two Surgeon's mates. On the staff of each brigade was one Surgeon-Major. Each brigade therefore had one Surgeon-Major, two Surgeons, and six Surgeon's mates. One Surgeon-General was appointed in the Headquarters Staff of the Army.

Inoculation appears to have been introduced among the European population of India (among natives it has been prevalent from time immemorial, and is dying hard even now, in the twentieth century) about 1785. The *Calcutta Gazette* of 4th May 1786 states that the Managers of the Orphan Society had decided to have all the children under their charge inoculated, who had not had small-pox. The medical officer to the Society, Surgeon Nasmyth, inoculated 53 children, who all recovered, while three died out of nine who caught the disease in the ordinary way (Seton-Karr, vol I, p 149).¹

In 1787 the Government erected a hospital for inoculation at Dum-Dum, and 101 persons in that year, and 72 in 1788, were successfully inoculated (Seton-Karr, I, 254). Apparently these were all soldiers and their families.

Inoculation had a very short run among the Europeans in India, for within fifteen years it was superseded by vaccination. The *Calcutta Gazette* of 2nd December 1802 contains an announcement that the Governor-General in Council thanks Dr James Anderson, Physician-General and first member of the Medical Board in Madras, Drs John Fleming, Russell, Hare and Shoolbred, for their successful introduction of vaccination into Calcutta. In the same paper for 3rd February 1803, the Governors of the Native Hospital advertise that vaccination will be performed free at the Native Hospital in Dharamtolla on Tuesday and Friday mornings. Dr Russell was appointed the first Superintendent of Vaccination. Calcutta contributed liberally to a testimonial and address sent to

Dr Jenner, four thousand pounds being subscribed for the purpose (Seton-Karr, III, 111-115, III, 564, and IV, 163).

It appears from the above that vaccination was introduced into Calcutta from Madras, the "benighted Presidency," which contributed Stinger, Lawrence, Clive, and Kilpatrick to the Indian Army.*

Of the officers mentioned above, *John Fleming* entered the service on 17th August 1768, became Surgeon on 11th December 1771 (rapid promotion that!), on the appointment of the Medical Board on May 29th, 1786, he, as Surgeon of the Hospital at head-quarters, became the third, and junior, of the original members, held that post for 27 years, retired 10th November 1813, with over 45 years service, and lived for fourteen years more in England, where he died on 25th December 1827. He was also a Fellow of the Royal Society. *James Nasmyth* entered on 29th March 1783, became Surgeon on 30th May 1796, went on furlough and was struck off the list for not returning. *William Russell* entered 25th June 1797, became Surgeon 21st July 1808, gave up promotion, was created a Baronet in 1830, retired 18th June 1831 and died in 1839. *James Hare* entered 4th August 1802, became Surgeon 16th December 1814, and retired 6th June 1827. *John Shoolbred* entered 27th September 1794, became Surgeon 27th July 1807, retired 17th January 1821, and died 12th October 1831. *Robert Wilson*, mentioned below, entered 16th May 1770, became Surgeon 24th April 1778, gave up promotion, and died at Ghneti, a little above Serampur, in June 1813.

The first Native Hospital, other than military hospitals for sepoy, was opened in 1793 or 1794. The *Calcutta Gazette* of 18th October 1792 notifies that it was intended to institute a hospital for natives. The same paper on 1st November 1792 states that a meeting had been held, at which it was determined (1) to institute a hospital for natives, (2) to vest the management in an equal number of European and Native Governors, being residents of Calcutta, (3) that a Committee be appointed to raise subscriptions and prepare a plan (Seton-Karr, II, 355 and 542).

The *Calcutta Gazette* of 20th September 1806 (Seton-Karr, IV, 419) gives the accounts and returns of the hospital for the year 1805-06. The year runs from 1st September to 31st August. This looks as if the hospital had been opened on 1st September, probably in 1794. The building stood in Dharamtola.

The income for the year was Rs 12,188, the expenditure Rs 10,626, the balance in hand, 831 in cash, and 49,282 in Company's paper, also the house and grounds, which cost 43,898. During the year 220 in-patients and 2,874 out-patients were treated, 1,286 vaccinations were

¹ "Selections from the *Calcutta Gazettes*, showing the Political and Social Condition of the English in India from 1784 to 1823." In five volumes. The first three compiled and edited by W. S. Seton-Karr, C.S., the last two by H. B. Sandeman, C.S., Calcutta, 1864-1869.

* See the letter of Lt Col King, I.M.S., in October No., p 413 (1902), Ed, I.M.G.

performed There were 53 deaths, 4,265 were relieved and discharged, while 62 patients, 19 in and 43 out, remained under treatment at the close of the year

The following statistics are given for twelve years from 1st September 1794 to 31st August 1806 —

Year	House patients	Out patients	Vaccinations	Total
1794-95	115	101		216
1795-96	199	221		420
1796-97	228	267		495
1797-98	188	423		616
1798-99	202	471		673
1799-1800	201	624		825
1800-01	232	1,792		2,024
1801-02	222	2,223		2,445
1802-03	198	3,681	1,070	4,940
1803-04	218	4,443	1,461	6,122
1804-05	226	2,755	1,347	4,328
1805-06	220	2,874	1,286	4,380

The figures seem curiously small to our modern ideas, but on the whole shew a fairly steady increase It would be interesting to know what was the cause of the sudden rise in the number of out-patients, nearly triple that of the previous year, in 1800-01, and the great fall, of about 40 per cent, in 1804-05

The admissions to hospital for the preceding year, from 1st September 1805 to 31st August 1806, are also given, classified as follows —

Wounds	77	Spleen	3
Fractures	34	Rheumatism	2
Venereal	4	Cancers	2
Contusions	18	Ulcers and sores	21
Scalded and burnt	4	Excessive vomiting	1
Dropsy	7	Tumours	1
Abscess	8	Dislocations	1
Fever	15	Concussion of brain	3
Palsy	2	Mortifications	3
Dysentery	2	Cholic	2
Fistula in ano	1	Catarrh	1
Strangury	5	Scurvy	1
Locked jaw	2		
TOTAL			220

The return is signed Robert Wilson, Superintendent The conditions for which patients were admitted remind one strongly of those which now cause admission to a small in-patient hospital in the mofussil, say at a sub-division, where paupers picked up by the police, and injuries, form the bulk of the in-patients The former class of cases may be represented by ulcers and sores, one-tenth of the whole, mortifications, dropsy, palsy, and scurvy while no less than 143, much over one-half, are cases of injury The number of admissions for fever and dysentery is very small, while it is worthy of note that cholera is not mentioned But this was long anterior to the historic epidemic of 1817 Operation cases are few in number, but may be represented by strangury (stricture), 2, fistula in ano, 1, cancers, 2, and tumour, 1

In the original file of the *Calcutta Gazette*, in the Record Office, similar statistics are advertised yearly for many years

The *Calcutta Gazette* of 22nd August 1793 contains the following orders about case-taking in Hospitals "Resolved, that it be made a standing regulation that every Surgeon or mate attending an Hospital, or having charge of any particular division or wards, shall keep a diary, expressing the names of the patients under his care, the nature of the disorders, when admitted, daily states of the patients, and copies of all the prescriptions, that this diary may be examined daily by the Head Surgeons, and that the dates of the discharges or casualties, and every alteration of treatment ordered by the Head Surgeons be particularly noticed Copies of these books, signed by the respective Surgeons, or mates, and countersigned by the Head Surgeons, are to be sent quarterly to the Hospital Board, and the original books are to remain always in the Hospital" It would be very interesting now-a-days to see one of these original books, but it is not likely that any of these case books have survived the Indian climate, damp, and white ants, for a century

The Gazette of 17th July 1794 contains an order on the inspection of hospitals by the administrative head of the service "Resolved that Mr John Land, Senior Member of the Hospital Board, be employed under the Inspection of the Commander-in-Chief to inspect the Hospitals, at the upper stations of the army, during the present season, and that he be accordingly directed to attend to such instructions as he may receive from the Commander-in-Chief" John Land was one of the original members of the service, one of the Surgeons who were serving the Company in Bengal before they were constituted into a service on 1st January 1764 He became full Surgeon on 23rd February 1771, resigned 16th January 1789 (*ie*, took leave without pay to Europe), was re-admitted on his return in 1791, and retired in 1802

Lock Hospitals appear to have been established early in India The following order, authorizing the establishment of such a hospital at Ghazipur, is taken from the *Calcutta Gazette* of 17th January 1811, and shows that such hospitals were already well recognized institutions

"General order of 7th January 1811 The Governor General in Council authorizes the establishment of a Bazar Hospital for native women at Ghazee-pore, under the same regulations as are prescribed for those at the other stations of the army, where such hospitals are established"

NOTES ON THE ORIGIN OF THE PRESIDENCY GENERAL HOSPITAL, CALCUTTA.

BY D M MOIR, A.M., M.D.,

MAJOR, I.N.S.,

Offg Surgeon Superintendent

I Date of Building

INQUIRY into the origin of the hospital soon convinced me that its early history has been

involved in obscurity, and these notes are the result of an endeavour to get at the facts. The task has been greatly simplified through the courtesy of Prof C R Wilson, M.A., D.Litt., who afforded me every facility, and by the aid of his assistant, Mr P Dias, who gave me invaluable help in searching the records of the Hon'ble East India Company, which are stored in the Imperial Record Department, Calcutta.

That some dubiety and confusion have existed the following extracts tend to show.—In 1824, Mr Charles Lushington, of the Bengal Civil Service, published his *History, Design, and Present State of the Religious, Benevolent and Charitable Institutions, founded by the British in Calcutta and its Vicinity*¹. He says that—"The premises now denominated the General Hospital were, in their original state, occupied as a garden-house by an individual, from whom they were purchased by the Government, in the year 1768, and converted into a Hospital. They were subsequently enlarged and surrounded by a wall, and now afford ample accommodation, in separate buildings, for patients and for the Medical Officers and Establishment attached to the Institution." His description, of which this is only an extract, is about as full and accurate as any that I have come across on this subject.

Mr W H Carey, a descendant of the great Serampur Missionary, appears to have derived his information from the above source. In his *Good Old Days of Honorable John Company, 1600 to 1858*,² published in 1882, he states that—"The premises now denominated the General Hospital were, in their original state, occupied as a garden-house by an individual, from whom they were purchased by the Government in the year 1768, and converted into an hospital. The hospital affords accommodation and medical treatment to Europeans belonging to His Majesty's civil, military and naval services, and to seamen belonging to private and foreign ships, and also to European paupers. All Europeans of whatever class are admitted."

The information given in Messrs Newman and Company's *Handbook of Calcutta*³ bears evidence of having been culled from the same source. "The premises now denominated the General Hospital, situated to the south of the Presidency Jail, were, in their original state, occupied as a garden-house by an individual from whom they were purchased in 1768. They have been from time to time enlarged, and now afford ample accommodation in separate buildings, for patients and for the Medical Officers and establishment attached to the Institution."

These three authorities evince a phenomenal similarity as to their facts and phraseology, and stimulate the reader's curiosity regarding the

mysterious "individual" who was the fortunate possessor of a "garden-house," which he sold to the Company for use as a hospital. There is a brief reference on the same lines in an article in the *Calcutta Review*⁴ for 1852, entitled *Calcutta in the Olden Time—Its Localities*. It runs as follows—

"The General Hospital reared its head, as early as 1768, over the then solitary Chaurangi, 'far from the city', previous to 1768, it was the garden-house of an individual, and was purchased by Government."

Passing now to an official source, in which accuracy might be expected, we find the beginning of the hospital ascribed to quite a different date. In their *Report on the Calcutta Hospitals*² by the able and comprehensive Committee appointed in 1878 to inquire into medical expenditure in Bengal, it is alleged that—"The hospital was erected in 1795, with the centre block as the civil hospital, the east wing the European military hospital, and the west wing the native sepoys' hospital." The incorrectness of this date will be proved hereafter.

In another official statement both 1768 and 1795 are mentioned, the former for the conversion of a garden house into the centre block of the hospital, and the latter for the building of the east and west blocks. The Great Unknown, the unnamed "individual," is here described as "a native gentleman." I allude to the *Report of the Committee on the structural needs of the European General Hospital, Calcutta*, which was published in August 1896. This is their statement⁵—"The early history of the General Hospital cannot be fully cleared up. Of the three main buildings, it is believed that the one known as the central block was not originally constructed for the purposes of a hospital, but was purchased by Government in 1768 from a native gentleman who occupied it as a garden-house. The two detached wings, known as the eastern and western blocks, were erected in 1795, the central building being then used as a Civil Hospital, the eastern building as a European Military Hospital, and the western building as a hospital for sepoys."

The records to which I have had access prove that the east and west blocks were not constructed in 1795, and that the Company did not purchase the central building from a native gentleman. At a Consultation⁴ held on the 4th May, 1772, with the Hon'ble Warren Hastings as President of the Council at Fort William, a lengthy communication, dated the 1st May, 1772, from the Rev J Z Kiernander was read and recorded. Prolix though this be, it contains in a pithy sentence the dates on which the different buildings were taken over by

¹ P. 291

² Vol. II, Chap. V, p. 41

³ Pp. 297-8, 3rd Edition, 1892

⁴ Vol. XVIII No. XXXVI, p. 286

⁵ Appendix C, p. 1

⁶ Para 2 p. 1

⁷ Public Proceedings, January to June, 1772

the Company and occupied "The first House, or Cente Building was delivered up and taken possession of June 20th, 1769, being 12 Months less 7 Days before the Limited time of the Contract The West wing was begun to be inhabited by the sick people, April 2nd, 1770, and the East wing on June 2nd, by the New Recruits June 13th, 1770, was the last day of my two years' contract"

Mr Kiernander, then, was the unknown and mysterious "individual," whose garden house was purchased and altered to form the centre block of the General Hospital, and this is the oldest of all the buildings It could not, however, have been erected much before 1768, because we find it described as "a large strong new built house" in a letter¹ to the Court of Directors dated the 4th April 1768

Mr Kiernander speculated largely in building operations, so it is probable that he himself was the architect of this garden house, which he assuredly altered to constitute the nucleus of a hospital It is quite certain that he was the contractor and builder of the east and west blocks

II John Zachariah Kiernander

To the enterprise and energy of a Swedish missionary, Calcutta, is indebted for the buildings of the General Hospital, which have stood the test of time for over one hundred and thirty years The story of the Rev Mr Kiernander's life is one of adventure and vicissitude, combined with patient, strenuous effort and varied interests He lived to the ripe old age of 88 years, three score of which were spent in India² Kiernander was born at Akstad in Sweden on the 21st November, 1711, at the age of 24 he was inspector of the Latin school at Halle, and when 28 he was ordained for the ministry On Christmas day, 1739, he arrived in London, and was sent out to India in the following year by the Society for Promoting Christian Knowledge, sailing in the ship "Colchester" He arrived at Cuddalore on the 28th August, 1740, where he appears to have remained for 18 years Cuddalore was captured by the French troops under Comte Lally on the 4th May, 1758, the mission was broken up, Kiernander was stripped of all his belongings and was given a pass to Tranquebar This was a Danish settlement, to which Frederick IV, King of Denmark, sent the first Protestant Mission in India in 1705

In the year 1758 fortune favoured the French power in what is now the Madras Presidency, and Fort St David capitulated on the 2nd June The state of Southern India being so unsettled Kiernander eagerly accepted the invitation given him by Colonel Clive³ to establish a mission in Calcutta, where he came

as the first Protestant missionary to Bengal.⁴ He reached Calcutta on the 29th September, 1758, and was presented with a rent-free house by the Governor (Clive), who gave him all possible encouragement and support Here he opened a mission school for as many as 175 children of European origin, many of whom he supported, at his own expense, and this school he conducted for about thirty years

Some notion of the condition of Calcutta in 1758 is derived from Carey's description² — "The state of Calcutta, when Mr Kiernander arrived in it, was pre-eminently the living solitude of a city of idolaters *Suttee* fires were to be seen frequently blazing in the very precincts of Calcutta, fakirs ranged *ad libitum* through the town in a state of complete nudity, there was no chaplain in the city, and the service was read by a merchant who was allowed £50 per annum for his services"

In 1767 Kiernander acquired the site of the Old Mission Church, which he built mostly at his own expense It is chiefly as the founder of this church that he is remembered in the annals of Calcutta He finished the building in 1770 at a cost of 60,000 sicca rupees, and named it Beth Tephillah or the House of Prayer While engaged in the construction of his own church he undertook the contract for the building of the General Hospital, which he accomplished between June 1768 and June 1770 The nature and extent of his difficulties and sacrifices to fulfil the terms of the Hospital contract will be explained subsequently The following extract will suffice to show that he allowed the interests of the Hospital even to take precedence of his own pet scheme—his Church "After this I waited still several days, but I waited in vain for Chunam, and I waited in vain for a further answer Upon this I resolved to take my own Chunam from the Church, for to compleat the Hospital"³

In 1778 he was afflicted with cataract, and in 1782 the operation of "Couching the lens" was performed in both eyes so successfully that he wrote to the Society in London to express "his happiness, in once more being enabled to see the prosperity of the Mission" Kiernander's period of blindness, however, led to his undoing During this time his son was in charge of his business transactions Being young and inexperienced he fell an easy prey to unscrupulous persons, and the helpless old father signed various bonds for his son The crash came in 1787, when he was declared bankrupt

Kiernander retired to Chinsurah, where he was appointed Chaplain to the Dutch Lutheran Church Even now he was not destined to be left in peace, because war was declared between

¹ No. 65, Public Letters to the Court of Directors, 1768 1769

² Holmes's *Obituary*

Carey's *Good Old Days of Honorable John Company*

³ Busted's *Echoes from Old Calcutta*

⁴ *The Good Old Days of Honorable John Company*

⁵ Letter to Warren Hastings—Public Proceedings, Consultation of 4th May, 1772

Great Britain and Holland in 1795, Chinsurah was captured, and Kiernander taken prisoner by the English, amongst whom so many years of his life had been spent. So he again settled in Calcutta, but the following year he had the misfortune to fracture his thigh while attempting to rise from his chair. Kiernander lingered on in suffering and in reduced circumstances till almost the close of the century, and died in Calcutta in 1799 at the age of 88 years. The bulk of these particulars are taken from that quaint book, Holmes' *Obituary*, and my excuse for quoting them is to do honour to the forgotten architect and contractor of the Presidency General Hospital.

(To be continued)

EXPERIMENTAL INOCULATION OF MALARIA, WITH A RELAPSE AFTER EIGHT MONTHS

BY C F FEARNSIDE,

MAJOR, I M S

In the *Scientific Memoirs* for Medical Officers for the year 1901 a series of cases of malarial fever, caused by infected mosquitoes, was described. A number of anopheles mosquitoes, in whose salivary glands the sporozoites of Spring-tertian fever were shewn to exist, the mosquitoes having been previously fed on infected blood, were made to bite eight persons, seven of whom developed Spring-tertian ague. One of these was the writer, and he now proposes to outline his case, which has not been fully described previously. Infected mosquitoes were made to bite his arm on 12 separate occasions and after an incubation period of 17 days he developed Spring-tertian ague. Observations were recorded daily of his condition, and the following are selections from his diary—

January 10th—Feeling out of sorts, with a severe headache every day and a dry feeling of the skin in the afternoon, but no rise of temperature.

January 11th—12th—Feeling worse, but no fever. Blood healthy.

January 13th—In a similar state but worse in the afternoon. Blood healthy.

January 14th—Unable to take any dinner, so retired to bed early. Temperature at 8 P.M., was 99.6, but much higher during the night. Blood examined in the morning gave negative results. Fingers felt numb with cold.

January 15th—Temperature normal and no parasites in the peripheral blood. Felt too ill, however, to do any work.

January 16th—Temperature (evening) 99°F, skin dry, and spleen very heavy on left side. No parasites visible in blood.

January 17th—No fever, feeling better this morning. Blood normal.

January 18th—Again ill, unable to eat, temperature was normal at 3 P.M., when a blood examination was made with the following results.

(1) Pigmented Spring-tertian spheres, (2) numerous pigmented leucocytes, (3) young hyaline plasmodia. Temperature at 4.45 P.M., was 100°F. Urine high coloured with a trace of albumin. Temperature at 9 P.M. was 102.6.

January 19th—Temperature sub-normal. Blood examination: (1) Flagellated sporules exceedingly numerous, one seldom sees so many in the blood of injected persons, (2) Spring-tertian spheres, (3) young plasmodia.

January 20th—Pigmented sphere in phagocyte and pigment in leucocytes. Doses of quinine, 20 grains daily, being taken. Spleen very painful and swollen. No fever.

January 21st—28th—Fairly well, no parasites in blood as shewn by examination on 21st, 23rd, 25th and 28th.

February 1st—7th—Still feeling unwell and there is mucus and slime in the stools. Blood examination on 3rd and 4th gave negative results.

February 16th—27th—Still mucus in the stools, and there is considerable malaise resulting from the flatulence and catarrh of the bowel. Blood normal and no parasites visible in the peripheral blood. Small doses of quinine being taken.

February 28th—Bad colic, which culminated in a choleraic-like attack. Felt feverish for the most of the day. Blood healthy.

March 1st—15th—Motions now healthy and blood normal as shewn on 1st, 5th, 10th and 15th. Lost 10 lbs in weight since the fever began.

March 19th—Blood contains Spring-tertian parasites. Temperature 100°F.

March 20th—Feeling out of sorts.

March 21st—Ill. Temperature 102.2°F.

March 22nd—No fever.

March 23rd—Became cold and chilly while doing office work. Severe pain over the lumbar region and spleen. At 4 P.M., cold and shivering began again, and the temperature rose. At this hour the blood contained (1) Flagellates, (2) Numerous, Spring-tertian spheres and young plasmodia, (3) pigmented leucocytes.

March 23rd—Slept from 6 to 8 P.M., when sweating took place and the temperature fell from 104.6°F to 100°F.

March 25th—31st—Slightly better, lost 14 lbs since illness began. Temperature 99.6°F on 25th.

April 1st—8th—More or less ill and felt at times as if fever were going to recur. The quinine appears to have some difficulty in restraining sporulation, for parasites are still occasionally to be found in the peripheral blood. Spleen and joints are giving considerable trouble.

April 9th—Mucus in stools. Taking small doses of Magnes Sulph along with the quinine.

April 10th—25th—Convalescing.

April 26th—Left for England

May 20th—Arrived in England, no fever again, appetite returning and bowel's normal

July 15th—Felt as if an attack of ague were going to recur, but checked by a few doses of quinine

RELAPSE OF AGUE

November 11th—Feeling unwell and had a slight rise of temperature in the evening, viz, 99°F

November 12th—Unwell, pain over left side and back

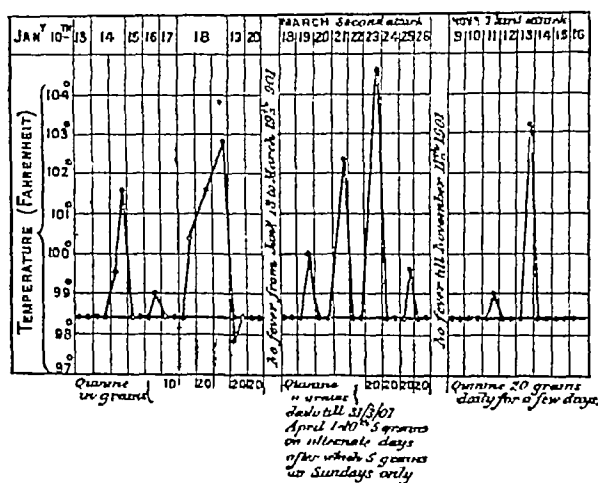
November 13th—Sharp attack of fever Temperature 103.2°, with shivering and perspiration. A few parasites in peripheral blood (spring-tertian)

November 14th—Felt my spleen very heavy in my side. Dosing myself with quinine, 20 grains daily

November 16th—Better to-day, but still pain over spleen

November 25th—Pain in spleen still perceptible

November 30th—Convalescent



The experiment caused considerable discomfort and inconvenience, and proves conclusively that the anopheles mosquito was the carrier of the infection. The writer was induced to try the experiment in order to discover whether there was any chance of his most severe attack of Summer-autumn fever, complicated by hæmoglobinuria, 10 years previously, had produced any immunity to malarial fever. Although Celli contends that immunity is possible, this experiment is opposed to any acquired immunity.

A remarkable feature is the absence of fever between January 21st and March 19th, and coincident with this, the absence of the parasite in the peripheral blood during the same period. Although no parasites were detected in the interval after repeated blood examinations, it is impossible not to conclude that the hæmamoebæ were quite busy enough to cause all the malaise and discomfort during the month of February.

The fresh outburst of fever on March 19th shews them breaking out into still greater activity and the rise of temperature is co-temporaneous with the re-appearance of Spring-tertian endoglobular parasites in the blood. The spring-tertian parasite, like its fellow, the summer-autumn, is able to remain unobserved in the internal viscera, spleen, liver, capillaries of the intestine, leading up to dysentery and chronic catarrh of the bowel in neglected cases.

Eight months elapsed ere the third attack of fever occurred in November, during which period the parasite remained quiescent, though by no means dead, in some organ or in such small numbers as not to be detected in the peripheral blood. There was no possibility of a fresh inoculation. The late Dr. Thorburn Manson, after a similar experiment, had a relapse of ague in the same town in Scotland where the writer also had a recurrence of the fever.

The hæmamoebæ may therefore remain latent for months, why not for years, in which case, where anopheles exist, he is a danger to the community. The crusade against malaria is indeed a difficult one.

REMARKS ON THE DIFFERENTIAL COUNT OF THE LEUCOCYTES IN MALARIAL AND OTHER FEVERS OF INDIA

By S. P. JAMES, M.B.

CAPTAIN, I.M.S.,
On Special Duty

WITHOUT wishing for a moment to minimise the value of the results of the differential leucocyte counts which Captain Rogers has lately published in the *Indian Medical Gazette*, I should like to refer briefly to the subject of the differential count of the leucocytes in malaria, as this method of diagnosis has aroused considerable interest since it was introduced into India by Drs. Stephens and Christophers.

Captain Rogers says, in the *Indian Medical Gazette* for November, page 430—"I am so convinced of its great value (that is the value of a differential count of the leucocytes) as a simple and rapid method of diagnosis between malarial and other fevers of the tropics, that I have come to regard the search for malarial parasites, at any rate in cases which have already been dosed with quinine, as almost a waste of time as a purely diagnostic measure in ordinary clinical work."

This means that in ordinary clinical work Captain Rogers regards it almost as a waste of time to search for malarial parasites, because there is in the differential count of the leucocytes a more simple and rapid method of arriving at a diagnosis of malaria. It is not my object in

these remarks to refer to the relative merits of the different methods of diagnosis of malaria it appears unnecessary indeed to do so, because every one will agree that in a suspected case of malaria, even when quinine has been given, the first thing to do is to search for parasites and for pigmented leucocytes, and that any other means of diagnosis is entirely of subordinate value to this. The finding of parasites or of pigmented leucocytes in a blood film makes the diagnosis of malaria a *certainty*, whereas the detection of a change in the relative proportions of the leucocytes at the best only indicates a probability. I desire rather to take exception to the words I have placed in italics in the above extract from Captain Rogers' paper, for in my experience the making of an accurate differential leucocyte count is a difficult and exceedingly tedious matter, and for this reason this method of diagnosis is very unlikely to be of much use in ordinary clinical work. In the first place, in order to obtain accurate results it is certainly necessary to count at least 500 leucocytes, and I believe I am correct in stating that Drs Stephens and Christophers have published no cases in which they had not counted over 1,000 leucocytes. I have always admired the way in which either of these observers could sit down at the microscope hour after hour counting the leucocytes in a series of blood films from a single case, and their doing so has always appeared to me to afford a very good example of "scientific method"—the method which teaches us to "*give unqualified assent to no propositions but those the truth of which is so clear and distinct that they cannot be doubted*"*. I admit that to examine and place under its correct name each of 1,000 leucocytes requires a strong effort of will, and the desire to stop after two or three hundred leucocytes have been enumerated is very great, but there is no rapid road, to accurate scientific results, and it is surely better to make one observation, the truth of which cannot be doubted than a hundred of which men will say, "can I rely on these results being absolutely true?"

In view of the fact that the two observers mentioned above considered it necessary to make a count of 1,000 leucocytes in each case, I think we cannot consider results obtained from counts of only 250 leucocytes (which is the number stated by Captain Rogers to be sufficient), as reliable. I note also that some of Captain Rogers' results are obtained from counts of only 100 leucocytes. We may well ask why not 50 or even 25?

Assuming however that one is prepared to carefully examine at least 500 leucocytes, it becomes necessary to decide on the best form of stain. Undoubtedly the best stain for leucocytes is Ehrlich's triple stain (Ehrlich's Triacid-

losung f neutroph Granul, etc), but this stain does not show up malarial parasites, and it is of course advisable to use a stain which will make any parasites that may be present, readily seen. Romanowsky's stain is therefore the best to use. I have not found that this stain has the disadvantages of which Captain Rogers speaks (*viz*, its difficulty of preparation and its instability) and which have prevented him from recommending it. If made up in a single solution as recommended by Major Leishmann, R A M C, in the *British Medical Journal* for September 21st, 1901, is exceedingly easy to work and gives excellent results. The few difficulties that occur in preparing this single solution stain are easily overcome with a little trouble, and I believe it can at the present time be obtained ready made even from some of our Indian chemists. It has the advantages of rendering previous fixation of the blood films unnecessary, and of keeping good for many months.

The hæmatin stain recommended by Captain Rogers is not entirely satisfactory for making leucocyte counts, though it shows up parasites well. It was used by Drs Stephens and Christophers in Africa, because at that time (1900) they had had little or no practice with Romanowsky's stain. In the examination of the blood films the chief difficulty—and this is the only *real* difficulty in making differential counts—will be found in deciding exactly what form of leucocyte is to be included under the term "large mononuclear." Captain Rogers' method is to enumerate as "large mononuclears" all the single nucleated leucocytes which are as large as, or larger than an average polynuclear cell. This appears to me to be an unsatisfactory way of diagnosing correctly this form of leucocyte, for the size of none of the leucocytes is constant, and some of the large *lymphocytes* are as large as a polynuclear cell. At any rate, by such a method, there will always be a certain number of "doubtful" forms, and I know from my own experience that if one is doubtful whether a particular leucocyte is a large mononuclear or not, the desire (which may of course be resisted) is to put such a leucocyte in the "large mononuclear" column. How also about "transitional forms?" Does Captain Rogers class these with the large mononuclears or not? Personally I think it is always better to enumerate the transitional forms in a separate column. Regarding this diagnosis of a large mononuclear leucocyte I think the words in W Myers' translation of the "*Histology of the blood*" by Ehrlich and Lazarus are important, and that it is better to be guided by them than to trust to the relative size of the different forms of leucocytes. Myers says, "the large mononuclear leucocytes are sharply distinguished from the lymphocytes. They are large cells about two to three times

* Huxley, "Methods and Results"

the size of the red blood cell. They possess a large oval nucleus as a rule eccentrically situated, and a relatively abundant protoplasm which is free from granulations and stains very faintly.

Transitional forms are distinguished from these by the presence of a deeply notched nucleus and by the presence of scanty granulations in the protoplasm. Undoubtedly a good method of impressing the characters of a large mononuclear leucocyte on one's mind is that recommended by Dr C H Melland in the *British Medical Journal* for September 27th, 1902 ("The Leucocytes in Malaria"), viz, to go carefully over a slide containing pigmented leucocytes. Any mononuclear leucocyte which contains pigment granules will of course be a "large mononuclear," and its characters can be studied.

Lastly we have the difficulty that the relative proportions of the different varieties of leucocytes present in the blood of *healthy natives of India* has not, so far as I am aware, been worked out in any number of cases. According to Dr Christophers the proportion of large mononuclears in healthy natives of *Africa* is about 10 per cent. For children it may be much higher than this. Some of Drs Stephens and Christophers' figures are as follow*—

Large mononuclear		
1	13.2	} Young children, showing no parasites in the blood
2	12	
3	24	
4	24.5	
5	16.5	
6	12	
1	8.2	} Adults, passed the age at which infection takes place
2	13	

I think that before we can deduce any inferences of value from this method of diagnosis of malaria in India, it is certainly necessary to obtain figures from a number of films of blood of healthy natives of India at different ages. We must remember that Dr Stephens and Christophers' opinion that an increase in the large mononuclear cells beyond 15 per cent was of great diagnostic value, referred only to *Europeans*—a fact which has apparently been generally overlooked.

In conclusion, I may say that the results of Captain Rogers' differential counts of leucocytes in seventeen cases of malarial cachexia in Calcutta (*Indian Medical Gazette*, November, page 427) differ materially from those of 80 cases of exactly the same nature examined by Drs Stephens and Christophers in Calcutta last year, for whereas Captain Rogers shows a large mononuclear increase to be present in practically all his cases, Dr Stephens and Christophers distinctly state (referring to cases

classified as "malarial cachexia and enlarged spleen" in the Calcutta hospitals) "We examined over 80 of such cases, and in none did we find parasites, or pigmented leucocytes, or any mononuclear leucocyte increase such as we have shown in earlier reports to be characteristic of a recent infection."

It must therefore be left to others to determine which of these two series of observations is correct, but sufficient has, I think, been said to justify my conclusion that the differential count of the leucocytes is not by any means a simple and rapid method of diagnosis which can be made use of in ordinary clinical work.

SERUM AGGLUTINATION AND ACUTE DYSENTERY

By W G PRIDMORE,

CAPTAIN, I M S,

Civil Surgeon, Bhamo

No disease probably has had so many organisms ascribed to its causation as dysentery. Their name is legion. perusal of the literature on the subject at once tends to dispel the idea that it is by any means a uniform disease all the world over. Shiga of Japan, Flexner and Strong in the Philippines, Vedder and Duval in the United States, Kiuse in Germany, and others have, however, done much to show that the disease has more unity than was once thought probable. The results of the labours of these observers have been so uniform as to lead to the hope that at last the guilt of causing one form of dysentery has been brought home to the bacillus first isolated by Shiga. The very excellent and interesting paper on Amoebic Liver Abscess and its connection with dysentery by Captain Rogers, I M S, read before the last annual meeting of the *B M A* and published on pages 844—851 of the *B M J*, September 20th, 1902, together with the observations of other workers, has done much to elucidate the cause of another type of the disease. My observations during the past year on some cases of acute dysentery tend to corroborate the opinion that bacillic dysentery is the same all over the world. In two of the seven cases described below I have isolated bacilli which, as far as I have investigated them, are indistinguishable from the bacilli isolated in Japan, the United States and the Philippines, and which will, I doubt not, prove to be identical with them. Through the courtesy and kindness of Dr Flexner and Mr A Foulerton, F R C S, I obtained cultures of Shiga's bacillus, and also of Flexner's isolated from cases of dysentery in New Haven and Manila. With these I have tested the agglutination power of the serum of all cases of dysen-

* "The malarial infection of native children." Reports to the Royal Society's Malaria Committee, 3rd Series, 1900

* Reports to the Malaria Committee of the Royal Society 6th Series, 1902, page 21

tery admitted to the jail hospital, Bhamo, since 1st May 1902, with a positive result, excepting one which was a very mild attack

Case I—Nga Thin, Burman, age 25 Labour, wheat grinding Admitted to jail, 14th March 1902 Date of first symptoms and admission to hospital, 1st May 1902 Previous health good

On admission—A spare but fairly well nourished man complaining of frequent stools (20 in 24 hours), consisting of blood and blood stained mucus, griping abdominal pains with burning sensation at anus and great straining at stool Tongue slightly coated Liver dulness normal Spleen slightly enlarged and felt below costal arch Tenderness over abdomen marked in left flank, and especially so in left iliac region Urine scanty, high coloured, reaction acid, sp gr 1018 No albumen Heart and lungs normal Temperature on admission 98.6 F On the second and third days it rose to 100 F and 101 F

Treatment—Oil Ricini 2℥ with Tinct Opium ʒ℥, abdominal water compresses kept applied

Diet—Milk 48 ozs with 15 ozs of lime water divided into 9 feeds

4th May—Stools 14 in 24 hours, consisting of blood stained mucus floating in a small amount of fluid Reaction slightly alkaline and almost odourless

Microscopic appearance of stool—Abundant red blood cells and pus cells with numerous coli like bacilli and a few cocci in chains No amebæ Blood of peripheral circulation free from malaria parasites

6th May—Stools faecal and watery Two passed in 24 hours Patient almost free from pain and tenesmus A mixture containing Izal, m iii Tr Chloroformi et morphine m viii, and Bismuth gr x given three times a day and barley water substituted for lime water in the milk For some days the stools remained loose, and three or four were passed in 24 hours Pain and tenderness over the iliac fossæ, chiefly the right still present On the 16th May the stools had become semi consistent, and boiled rice was added to his diet He gradually assumed ordinary diet and was discharged well on 30th May

Serum reaction with Bacillus Dysentericæ

Dilution	1 in 10	1 in 20	1 in 40	Time	—	Culture used
27th May	+	+	+	30 minutes	Complete	Manilla (Flexner)
28th "	+	+	+	Ditto	Ditto	Japan (Shiga)
15th June	+	+	+	20 minutes	Ditto	Ditto

Case II—Kyan Chin Si, Chinaman, age 22 Labour, wheat grinding Admitted to Jail, 22nd January 1901 Date of first symptoms and admission to hospital, 7th May 1902 Previous health good

Before admission to Jail was an opium smoker and eater to the extent of 1½ tolas (225 grains a day)

On admission—A well nourished man complaining of frequent stools (13 in 24 hours) Abdominal griping pains severe in character There was also tenderness on pressure and straining The tenderness was most marked over the left iliac fossa Tongue coated in the centre Pulse, 50 Temp 98.4 Spleen and liver dulness normal Urine scanty Sp gr 1015 Alkaline contained no albumen or sugar Stools at first consisted of loose faecal matter mixed with blood stained mucus and blood, but the faecal matter soon disappeared, and they increased in frequency to every hour becoming scanty and accompanied by painful straining

Treatment—Oil Ricini 2℥ with Tr Opium ʒ℥ The diet consisted of three pints of milk mixed with 15 ozs of barley water and divided into 9 feeds He was also allowed as many fresh plantains as he wished In three days the stools were faecal, and the symptoms had considerably abated, but on the fifth day of the attack they recurred

The Izal mixture containing Subnitrate of Bismuth and Tr Chloroformi et morphine was administered three times a day The symptoms gradually subsided, and on the 10th day of the attack (May 17th) the stools became healthy, and a more liberal diet was allowed He was discharged cured on 31st May

Serum reaction with B Dysenteria

Dilution	1 in 10	1 in 20	1 in 40	1 in 100	Time	—	Cultures used
27th May	+	+	+		20 minutes	Complete	Manilla (Flexner)
28th "	+	+	+		10 "	"	Japan (Shiga)
15th June	+	+	+	+	30 "	"	" "

Case III—Sao Tin, a Kichin, age 25 Labour, wheat grinding Admitted to Jail 30th June, 1902 Date of first symptoms and admission to hospital 17th July 1902

Previous history—Said that he had suffered from dysentery on several previous occasions and admitted that he was an opium smoker and exter, but not to a large extent

On admission—A puny, cachectic man complaining of frequent (8 to 12 in 24 hours) stools with severe griping and straining at stools The stools consist of blood and blood stained mucus floating in a dirty red fluid resembling meat washings

Microscopic appearance of stools—Red blood cells and pus cells abundant with numerous coli-like bacilli and a few cocci

There was extreme tenderness over left iliac fossa Tongue coated in centre Edges and tip clean Temperature normal Liver and Splenic dulness not increased

Urine—Sp gr 1008 slightly acid, a trace of albumen No sugar

Treatment—Similar to the two preceding cases, i.e., Castor-oil and Tincture of Opium with a diet of milk and barley water divided into 9 small feeds with plantains 24th July, 8th day of disease symptoms had almost disappeared, and he was allowed a little boiled rice He was much reduced and although the dysentery symptoms disappeared, he did not regain strength and developed dropsy Urine still contained albumen, but in no great quantity 31st July symptoms of dysentery recurred The Izal treatment was tried, and the diet restricted again to milk Stimulants in small quantities also administered the Izal mixture did no good, and powdered Ipecacuanha in 25 grain doses was substituted There was some improvement after this, but the stools became very offensive Sulphate of Quinine gr xxxv with Tartaric Acid in 1½ pints of water at 100°F, was used as a rectal injection twice a day and a mixture containing Tr Opium ʒ℥, Quinine Sulph gr iii, Acid Sulph dilu m ʒ was given every 4 hours

16th August—Stools healthy After this date he had no more symptoms of dysentery, but his temperature rose to 100° and he developed stomatitis with some sloughing of the buccal mucous membrane The œdema of his lower extremities increased, and he grew weaker and weaker until his death on 24th August

Post mortem—Body emaciated, œdema of hands and feet Patch of gangrene on left side of face which had spread from the mouth

Heart—Weight 12 ounces adherent in places to the pericardium Walls flabby and thin No valve disease

Right lung—Weight 26 ounces Normal
Left lung—Weight 16 ounces Normal
Liver—Weight 35 ounces, small, cirrhotic with fatty degeneration
Spleen—Weight 8 ounces Extremely hard
Right kidney—Weight $3\frac{1}{2}$ ounces, hard and pale, capsule adherent
Left kidney—Weight 4 ounces, hard and pale, cortex atrophied, capsule adherent
Intestine—Wall of small gut much attenuated Large gut from descending colon to the rectum was the seat of numerous punched out ulcers, most of which had healed They were most numerous in the sigmoid flexure and rectum and varied in size from $\frac{1}{4}$ inch to 1 inch in diameter There were a few similar scars on the transverse and ascending colon In the rectum there were in addition some small fresh ulcers varying in size from a pin's head to $\frac{1}{4}$ inch in diameter These ulcers had injected, angry looking edges, were irregular in shape and inclined to run at right angles to the lumen of the intestine

Serum reaction with Bacillus Dysenteriae

Dilution	1 in 10	1 in 20	1 in 40	Time	Culture used
22 July	+	+	+	30 minutes	Complete Manilla (Flexner)
30 "	+	+	+	"	Complete, but not permanent Manilla "
31 "	+	+	+	"	" New Haven "
7 Augt	+	+	+	"	" Manilla "
15 "	+	+	+	20 minutes	" Japan (Shiga)

In all the above tests the clumping was most decided and complete, but, to my astonishment on examination of the hanging drop of the 30th July some hours after it had been first examined, I found that the clumping had disappeared On all subsequent occasion when this patient's serum was tested the clumping was perfect within 30 minutes, but in a few hours all signs of it had disappeared

Case IV—Aing Moung, a Kachin, age 25 Labour wheat grinding Date of admission to Jail 6th June 1902 Date of first symptoms of illness and admission to hospital 23rd July 1902

Previous history—Before admission to Jail was an opium eater

On admission—An emaciated man with an anxious expression complaining of passing frequent stools (13 to 20 in 24 hours) accompanied by severe griping abdominal pain and straining There was extreme tenderness over the left iliac fossa

The stools consisted of dark brown fluid with blood and blood stained mucus floating in it They emitted a faint sickly odour and had an alkaline reaction Microscopically red blood cells and pus cells were seen in abundance with a few coli like bacilli Temperature, normal Pulse 76 Tongue slightly coated at centre Splenic and liver dulness normal

Treatment—Oil Ricini $\frac{3}{4}$ with Tr Opium $\frac{1}{2}$ was administered at the onset, and a diet consisting of 3 pints of milk mixed with 15 ounces of lime water divided into 9 feeds was prescribed He was also allowed as many plantains as he desired A cold water compress was kept applied to the abdomen

28th July, 6th day of disease, stools much diminished in frequency but not faecal The pain and straining also diminished The Izal mixture containing Izal m iii,

Bismuth Subnit gr x, Tinct Chloroformi et morphinae m viii with mucilage administered every 4 hours, 3 ounces of rum also prescribed daily as the pulse was flagging Symptoms abated still further, but on August 1st 5 to 10 stools were passed daily They were faecal, but accompanied by blood and mucus Ipecacuanha in 25 grain doses was then resorted to preceded by a mixture containing Bismuth, Morphia and Hydrocyanic Acid A formed faecal stool was passed 48 hours after the commencement of this treatment, and the patient rapidly convalesced On the 9th August he was allowed a more liberal diet and discharged from hospital well on 26th August

Serum reaction with B Dysenteriae

Dilution	1 in 10	1 in 20	1 in 40	Time	Culture used
26th July	+	—	—	30 minutes	Japan (Shiga)
30th "	+	+	+		Manilla (Flexner)
7th August	+	+	+		Manilla (Flexner)
15th August	+	+	+		Decided and complete Japan (Shiga)

Case V—Maran Hpaw Long, Kachin, age 23 Labour, wheat grinding Date of admission to Jail 14th June 1902 First complaint of illness and admission to hospital 7th August 1902

Previous history—Said to have had dysentery every year during the rains for the last four years Is an opium-eater

Symptoms on admission—Frequent stools, 8 to 10 in 24 hours, griping pain across abdomen, especially in umbilical region with painful straining at stool Tenderness in both iliac fossae, which was more severe on the left side Tongue pale, slightly coated in the centre Temperature normal

Stools consisted of blood and blood stained mucus with a small amount of faecal matter They were slightly alkaline in reaction and emitted little or no odour

Treatment—Castor oil with Tincture of Opium and a diet of milk with lime water and as many plantains as desired Water compresses were kept applied to abdomen Symptoms rapidly subsided, and boiled rice was allowed on 10th August four days after admission On 18th August severe symptoms again set in, and the stools, although faecal, contained much blood and mucus There was great tenderness in left iliac fossa, painful straining at stool and sleeplessness

Microscopical appearance of stool—Abundance of red blood cells and coli like bacilli There were also some pear shaped ciliated organisms three or four times as large as a red blood cell and actively motile Reaction of stool alkaline

The Izal mixture was tried with no benefit and was replaced by Ipecacuanha powder The stools quickly became faecal On the 24th August a healthy stool was passed, and all symptoms had disappeared Discharged well on 3rd September

Agglutination reaction with B Dysenteriae

Dilution	1 in 10	1 in 20	1 in 40	1 in 60	Time	Culture used
11 Augt.	+	+	+	—	30 minutes	1 in 40 in complete Manilla (Flexner)
1 Sept.	+	+	+	—	"	Complete " "
22 "	+	+	+	+	"	Complete " "

The two following cases of dysentery did not occur in the jail, but their blood serum gave such perfect clumping reaction that they are worth recording —

Case VI — Feroze Ulla Khan, Mahomedan, age 28, Police Constable, admitted to the Civil Hospital, 30th August, complaining of griping abdominal pains, frequent stools accompanied by much painful straining. The symptoms were of three days' duration. Temperature normal on admission, but it rose on the following day to 103° and remained high for two days. The stools at first were faecal, but contained blood and mucus. The faecal matter soon disappeared, and nothing but small quantities of blood and blood stained mucus were passed every hour or so with painful straining and griping. The usual treatment was adopted on admission, viz, one dose of castor oil and opium. The diet was restricted to milk and barley water and plantains. He had no other treatment and quickly recovered.

Agglutination reaction with B Dysenteriae

Dilution	1 in 10	1 in 20	1 in 40	1 in 60	1 in 100		Culture used
1 Sept	+	+	+	+	+	Complete	Manilla (Flexner)
16 "	+	+	+	+	+	Complete	" "

Case VII — Doorghat Khan, Mahomedan, age 28, Military Police Sepoy, admitted to Hospital on 17th July. A well nourished man complaining of the usual symptoms of dysentery, which, he said, were of three weeks' duration. The symptoms were of moderate severity. Tongue coated in the centre. Temperature 99.6. Stools were scanty and consisted of mucus and blood, with a small amount of faecal matter.

Microscopic appearance of stools — Abundant red blood cells, some pus cells and swarms of bacilli. He was treated with a dose of castor-oil and opium and at once put on Ipecacuanha powder in 25 grain doses twice a day preceded by the usual morphia mixture. The stool quickly became faecal and the man made a rapid recovery.

Agglutination reaction with B Dysenteriae

Dilution	1 in 10	1 in 20	1 in 40	1 in 100		Time	Culture used
20 July	+	+	+	+	Complete	30 minutes	Manilla (Flexner)
7 August	+	+	+	+	Complete	"	"
11 "	+	+	+	+	1 in 100 in complete	"	"

Serum reaction of 7 cases of Dysentery with the B Dysenteriae of Shiga and Flexner

Dilution	1 in 10	1 in 20	1 in 40	1 in 60	1 in 100	Time	Culture	
Case I	+	+	+	+	+	20 mins	Manilla and Shiga.	Complete
" II	+	+	+	+	+	20 "	Manilla	Complete
" III	+	+	+	+	+	20 "	New Haven Shiga.	Complete, but not permanent.
" IV	+	+	+	+	+	30 "	Manilla and Shiga	Complete
" V	+	+	+	+	+	30 "	Manilla	Complete
" VI	+	+	+	+	+	30 "	"	Complete
" VII	+	+	+	+	+	30 "	"	Complete except in 100

The above reactions were decided and complete in from 10 to 30 minutes with the exception noted. I am unable to offer any explanation of the temporary nature of the reaction in case No III, except that the patient was emaciated and cachectic from the effects of malaria. The agglutinating agent was evidently present, but was deficient either in quantity or quality. I have tested the agglutinating power of over 30 normal native bloods.

Several of them gave a reaction in dilutions of 1 in 10 and 1 in 20, but only two gave any reaction with a 1 in 40 dilution. If these observations are correct (and they were all carried out with the utmost care), when applying the test in cases of supposed dysentery the reaction, to be of any diagnostic value, should be complete in half an hour with a dilution of not less than 1 in 40. In all my tests, both with dysentery cases and with serum of normal blood, 12-hour broth cultures, freshly filtered, were used.

MEDICO LEGAL NOTES

By ARTHUR POWELL, M Ch
POLICE SURGEON, BOMBAY

Apoplectic effusions in the lungs in cases of suffocation

TIDY says "Apoplectic effusions into the substance of the lungs, common in strangulation, are not met with in cases of suffocation."

I have repeatedly found such effusions in the lungs of children which were, I believe, suffocated, and presented no mark of strangulation.

One case in particular, where a rag was stuffed into the mouth and completely plugged the pharynx and larynx, had effusions in both lungs.

When it is allowed that "Tardieu's spots" are common in suffocation, we may naturally expect bloody effusions into the lung substance also, as both effusions are of the same nature and may be produced by the same cause.

Accidental suffocation caused by vomited matter

I formerly published in this journal an account of a lad who was suffocated by a round worm which he had vomited.

While Resident-Surgeon in the Belfast Royal Hospital, I admitted a drunken man suffering from the effects of submersion. About two hours later the nurse having left the ward for a few minutes, found him dead on her return. I found *post-mortem* a wad of beef, which he had vomited, stuck in his larynx.

A few months ago a man met with his death in one of the Bombay Hospitals through suffocation by matters vomited after the administration of chloroform.

An inquest was held on a man who was found dead in his bed. I found a quantity of *dahl* and rice in his larynx, trachea and bronchi, death being due to suffocation from this cause.

There was an emission of semen which, though mentioned in the text-books only in connection with hanging, is not uncommon in other methods of asphyxia

Recovery from wounds of the Heart

There is a popular impression that all wounds of the heart are of necessity immediately fatal

Out of this idea lawyers frequently make much capital, as judges and jurors look with suspicion on the evidence of a medical man who tells them the contrary

During the riots in Belfast in 1886, a boy aged 18, was shot in one of the main streets. He then ran at least 120 yards up a side lane before he fell. At the autopsy I found the bullet in the inter-ventricular septum. It had pierced the anterior wall and traversed the cavity of the left ventricle. The bullet and heart were given to the Harlan Museum.

When Resident Surgeon, I admitted to the Belfast Royal Hospital a man who had been stabbed with a pitch fork. He lived four hours after admission. Autopsy shewed that one prong of the fork had pierced the left auricle.

At Pretoria, in 1900, a large number of worn-out horses were ordered to be destroyed. I shot a large number through the heart. Those struck by a 50C express bullet fell immediately, but of those shot by revolver, Mauser (coated bullet and "stopping" bullet) Lee-Metford, regulation, Dum-Dum, or Jeffie's bullet, not one fell without walking or hobbling a few yards. Some of the latter required a *coup de grace* in the brain.

Some years ago I read an account of a student in Berlin driving a needle into his heart. A surgeon opened the pericardium, caught the needle which was protruding from the ventricle. In his manipulation he let it slip in further. He spent some time grasping and manipulating the heart, but only succeeded in getting the needle into the cavity of the ventricle. Pericarditis ensued, but the patient recovered.

Some time ago I was cross examined at length as to the possibility of a man moving a short distance after an injury to the heart. I since searched the surgical papers and found the following cases—

Shepherd (*Canadian Practitioner*, December 1898) relates a case where a man attempted suicide by driving a darning needle into the heart. When the eye disappeared below the skin he thrust it further with the point of a file. He recovered.

Beer and Brown (*Cincinnati Lancet Clinic*) at an autopsy in 1898, removed a "small rifle bullet" which had been imbedded in the left ventricle near the apex since 1861. Thirty-seven years.

Ophuls (*Occidental Medical Times*, 15th August 1899), found at an autopsy a broken piece of a trochar covered by a canula embedded

in scar tissue in the inter-ventricular septum. No history of the case was obtainable.

In Ferriar's "*Chirurgie du Cœur et du Péricarde*," we find that Cappeln has sutured the heart muscle, death occurred on the second day.

Farena's case died on the sixth day after suture. Rehn's patient recovered.

Fontan ("Bulletins et Memoires de la Société de Chirurgie de Paris") May 1900, sutured a wound 12 mm long in the left ventricle.

Parlavocchio sutured a V-shaped wound, each limb of the V being 30 mm long. The patient recovered.

Paozani twice sutured the heart, one case recovered.

Giordano's case died on the 20th day.

Ferriar and Raymond ("Revue de Chirurgie," October 1900) state that the heart has been sutured eleven times by Surgeons, eight cases ended fatally, three recovered.

Loisson in the same *Revue*, January—July 1899, quotes 23 cases with 9 recoveries, where pins or needles had penetrated the heart.

Podiez (same *Revue*, May 1899), a Russian Surgeon, says he freely exposed and manipulated the heart of a girl, aged 16, in an unsuccessful attempt to extract a bullet. Contrary to the usual report in these cases "the operation was unsuccessful, but the patient recovered." He failed to extract the bullet. Other cases of recovery or survival for some time after wounds of the heart are quoted by Taylor and other medical jurists, but as they are within the reach of all, I do not repeat them.

The late Mr H A Hole, a well known shikari and naturalist in Assam, shewed me a small carpet tack surrounded by dense fibrous scar tissue, which he removed from the ventricle of a leopard. It had doubtless formed part of the loading of a native shikari's gun.

Injury from atmospheric electricity no lightning or thunder

At Avoca, between Barberton and Komati Poort, Transvaal, in October 1900, we were messing in the verandah of the railway station during a thunderstorm. A smart crack was heard, exactly as if some one struck the wall with a cane, there was neither flash of light nor crash of thunder. Three soldiers at the end of the verandah cried out and fell down. I found one who had been leaning against a rain pipe was paralysed in the leg and arm that had been resting against the pipe. The other two complained of inability to use their legs for a few minutes. All three complained of anaesthesia, numbness, tingling or "pins-and-needles" in the parts affected. I handed them over to Mr Stouliam's Yeomanry Hospital. The latter two were all right by the evening, but the man who was leaning against the spout took some time to recover.

DROWNING

Authentic record of period of submersion with survival

Many ancient "chestnuts" are copied from one text-book to another, recording survival after marvellous periods of submersion. The favourite is a man who survived "submersion for from 12 to 15 minutes" owing to his chest being compressed by heavy weights.

Guerard's case, where a man was said to have survived an hour's submersion, is still quoted by Taylor, who blushing adds "the evidence is not satisfactory."

We wonder what calm individual held the watch in making these records? In future they had better be quoted on pink paper only.

The following is the authentic "record" period of submersion without syncope or asphyxia. Miss E. Wallenda at the Alhambra music hall remained submerged in the presence of a large audience for four minutes, forty-five and a half seconds, as timed by several professional time-keepers with stop watches.

Cutis Anserina not the rule in warm climates

I seldom find cutis anserina in persons drowned in Bombay. I am inclined to think it is caused by cold, and hence is more common in Europe. *Retraction of the penis*, being also due to cold, is not usually marked in India.

Is the wrinkled condition of the skin of the fingers and toes—"washer-woman's hands"—a sign of prolonged immersion during life, or can it be produced by immersing the dead body? It may be produced in an immersed body which is subsequently allowed to dry.

Position of floating dead bodies

There exists a belief that men float face downwards, women face upwards. Taylor says "A woman's body, when it rises to the surface from putrefaction, usually floats belly upwards." This point is of no legal importance, but it is a remarkable fact, that the last six cases of drowned women that came under my notice all were found face downwards. Of twenty-two males, whose position I have noted, six floated face upwards, sixteen face downwards.

Period at which bodies rise to the surface

Briefly it may be said that the body will float as soon as its specific gravity becomes equal to or less than that of the fluid in which it is immersed. As the human body is almost always of a higher specific gravity than even sea water, it usually sinks, and its floating is due to the formation of gases by decomposition. The period at which a corpse will rise to the surface is influenced by the relative specific gravities of the body and of the fluid in which it is immersed, on the presence, number, distribution and character of the decomposing bacteria, and the conditions favouring or retarding their development, such as temperature, and the

presence of inhibitive substances, salt or antiseptics in the fluid.

On this point certain cases of Chevers are frequently quoted by lawyers and text-books on Medical Jurisprudence, and these cases were a number of people drowned by the wreck of a ship in the Hooghly. The great majority rose to the surface in from $3\frac{1}{2}$ to $5\frac{1}{2}$ days. None rose at an earlier period.

This even for the Hooghly is, in my experience, a very unusually prolonged period.

In the branches of the Biahmaputia, where the temperature is lower, and the water of lower specific gravity, flotation even in the cold weather takes place sooner than in Chevers' cases. In the rains flotation is seldom delayed beyond 36 hours. In Bombay, where the temperature varies little, the following cases came under my notice—

Drowned in wells

(1) Hindu, male 30, left his house at 6 P.M., May 23rd, declaring his intention of committing suicide, was found floating 36 hours later, at 6 A.M., 25th May, 1901.

(2) Male, went out with a *lota* for water at 10-30 P.M., 15th May 1901. He was found floating at 8 A.M. next day, $10\frac{1}{2}$ hours after being seen alive.

(3) Female, 28, was seen alive at 11 P.M., 1st May, was found floating at 8 A.M., 3rd May, 33 hours later.

(4) Male, aged 20, jumped into well at midnight 7th May, was dragged up at 7 A.M. next morning—had not floated in seven hours.

(5) European, female, 39, left home in a passion about midnight, 24th March, was seen to rise to the surface of a well three miles distant from her home, at 1-30 P.M., 26th March,—less than 37 hours. She was fully clothed, which probably retarded decomposition.

(6) Male, 28, fell into a deep well at 1 P.M., 18th March. A watch was set, he was found floating at 5-30 A.M., March 20— $40\frac{1}{2}$ hours. It is doubtful if he could have been seen had he risen during the night, supposing the watch had kept awake.

(7) Hindu, male, left home declaring intention to commit suicide, 5th August, 4 A.M. He was found floating at 7 A.M., in less than three hours.

(8) Male retired to bed at 10 P.M., 13th August, was found floating next morning at 6 A.M., less than eight hours.

(9) Male, 35, very emaciated, tubercular, retired to bed with wife at 9 P.M., 29th August, was found floating at 5 A.M., next morning, less than 8 hours.

(10) Female, 25, seen at 1 P.M., missed at 6 P.M., 30th April, found floating in covered well 5ft deep, at 10 P.M. next night. Her discovery was owing to complaints of a stench in the neighbourhood, so she had probably been floating some time, longest possible time of submersion, 33 hours.

(11) Mr Nolan, Bombay Police, tells me he "timed" a woman who fell into a well at 4 A M in August 1892. She came up in exactly 4 hours.

Drowned in tanks

(12) Male, 23, was seen alive at midnight, 26th March, was found floating 8 A M, 28th March, - less than 32 hours.

(13) Male, 35, was seen alive at 8 P M, 29th April, found floating at 7 next morning—less than 11 hours.

(14) Female, 55, had food with her son at 10 A M, 8th March, found floating face downwards at 1 P M.—3 hours later.

(15) Boy, aged 6, seen alive 8 P M, 12th March, found floating 7 next morning—11 hours later.

(16) Male, sank at 2-30 P M, 18th May, was dragged up at noon next day, had not floated in 21½ hours.

(17) Male, 70, seen alive 7-45 P M, May 26th, found floating at 1-30 P M next day, 17¼ hours later.

Drowned in quarry holes

(18) Male, 70, brought food to his son at 8 A M, 6th September, was next seen floating in hole 10 ft deep at 10 A M, following day—26 hours later.

(19) Male, 30, left his house at 11 A M, 4th May, was next seen floating at 9 A M following day—22 hours later.

I have taken these cases without any selection from my notes. They can be multiplied manifold, but they are quite sufficient to shew that Chever's figures are not of universal application.

It will be observed that many of the bodies in these cases were first seen floating at day-break, so that it is probable that they had been already floating for some time, and that these figures are in no case on the shorter side.

It will be seen that two bodies rose in less than 3 hours, one in 4 hours, two in 8 hours, three less than 11 hours, one less than 17¼ hours, one less than 22 hours, one 26 hours, one 32, two 33, one 36, one 37, one 40½ hours (?)

One had not risen after 7 hours, another after 21½ hours' submersion.

A NOTE ON OPERATION FOR HERNIA

By A NEVE FROSE,

Kashmir

DURING the last few years I have tried the methods most in vogue for radical cure of hernia such as MacEwen's, Ball's, Halsted's and Bassini's, and during the last year or two I have settled down to a modification of Kocher's. With regard to the other methods, I may state briefly what I consider their respective drawbacks.

Neither Ball nor MacEwen displace the neck of the sack enough, while the extensive interference by Halsted's or Bassini's operations with

the structures of the cord is apt to give rise to trouble in the testicle, both at the time and subsequently. I do not regard Kocher's latest modification, namely, invagination of the sac as an improvement.

The operation as I perform it is briefly as follows—

The incision is about 3 inches long and extends from about one inch above, and external to the ring downwards. Avoiding the cord I at once seek the sac, working with scissors and forceps. Pressure with a sponge on the lower end of the incision and the testicle is very useful at this stage, as it drags the cord down, while the sac remains prominent. My object is to open the sac as directly as possible, cutting quickly through its coverings with the scissors until a small opening in the peritoneum is made, then putting a finger into it. I separate the sac completely, or if it is very large, clear all structures off it for about an inch just external to the ring, and cut through it there. Gripping the sac with forceps, it is drawn down while the finger clears its neck up to and above the internal ring. The forceps are stout and well curved, these are pushed inside the ring, and out to about an inch below the anterior-superior spine where they are made prominent, and are cut down upon, by an incision which splits the fibres of the external oblique. The sac is then seized with another pair of forceps, while the others are withdrawn. It is drawn out through the wound, ligated at its base and cut off. The surface of the stump is sutured to the wall, by the stitch which unites the aponeurosis over it. Another stitch closes the skin wound.

The ring should be dealt with thoroughly, if the cord be small it may well be lifted up and brought out at the upper end of the ring, splitting the external oblique a little for the purpose, but if the cord be bulky I prefer to push it down, and carefully unite the walls of the ring, not edge to edge, but surface to surface, the external pillar, behind the internal pillar, and if these structures are too thinned, then opening the rectus sheath I include some of that muscle in the stitches.

The whole operation takes a shorter time to perform than to describe, I seldom exceed 20 minutes over it. So far we have seen no recurrences in the last fifty operations, except one in which there had been strangulation, and MacEwen's operation had been performed.

UTILITY OF SALINE INJECTIONS IN HÆMORRHAGE

By B K CHAUDHURI,

RESIDENT SURGEON,

Sambhu Nath Hospital, Calcutta

KURBAN Sheik, a Mahomedan male, aged 75 years, was admitted into the Sambhu Nath

Pandit Hospital, Bhayaniapur, on the 21st of May 1902, for the treatment of a scrotal tumour. The duration of the tumour was 22 years, and it was a moderately big-sized one. On admission the patient's condition was weak and debilitated. There was a sloughing ulcer with maggots in the tumour. Nothing abnormal was detected in the urine. Owing to his ill health and sloughing condition of the scrotum, as stated above, the operation was postponed till the 2nd of June 1902, when the tumour was removed in the usual way after compressing it with an elastic tourniquet. The tissues of the skin over the pubis extending towards both groins were considerably affected, so that they appeared like elephant skin. On making the first incision along the lines of the hidden penis, the tissues to be cut through before freeing it were more than an inch thick and very dense and hard at this part. The hæmorrhage was excessive, as owing to the non-pliability of the tissues, the vessels, both veins and arteries, were not sufficiently compressed by the tourniquet, although it had been tightly put on and had not slipped. The operation took about an hour and a half, and during the latter part of it, the patient began to show signs of approaching collapse, to prevent which ether and strychnine were injected. After the removal of the tumour the dressings were put in quickly, and the patient was removed to bed, where he was found *in articulo mortis*, no pulse at the wrist could be detected, extremities cold, cold clammy sweats on the body, and face pale. At this juncture two pints of saline solution (gr 11 to 3i) were injected, one pint in each axilla, previous to this, the patient was covered with blankets and hot bottles applied. About 25 minutes after the saline injection, the patient began to show signs of reaction, namely, a steady pulse appeared at the wrist, extremities became warm, pallor of the face and cold clammy sweats began to disappear, his voice became gradually stronger and more distinct, and he said that he felt better. He was given stimulant mixture and rum regularly for some days after the operation. Twenty-four hours after the operation all the signs of collapse disappeared, since then he made an uninterrupted recovery till on the 28th of June he was discharged from the hospital cured. It should be noted here that the tumours produced after the saline injection were of an oval shape and extended from the middle of the axilla to a point midway between the anterior fold of the axilla and the nipple. They gradually disappeared.

Remarks—This case illustrates the paramount importance of saline injection in hæmorrhage. It was obvious in this case that the man had not sufficient fluid in his vessels. The advent of the saline solution tided him over the difficulty till he could make more blood for himself. Although deadly pale with blanched lips for some days he

rapidly improved. The value of subcutaneous saline injection has been so impressed on me by this case that I think it would do no harm to report it, and thus encourage others to apply the same method of treatment in cases of acute hæmorrhage from operation.

CASE OF HERNIA OF THE BRAIN

By B. M. PUBOHIT,

HOSPITAL ASSISTANT,

Kolhapur

The following case of hernia cerebri may be of interest—

Rajabai, a woman aged 30 years, was admitted into the hospital on the 4th April 1900 for a wound over the head.

Immediate previous history—About a week before her admission, she happened to go down into a well for washing her clothes, &c., when a heavy lump of gravel and stone gave way over her head, from the top of the well, causing severe injury.

Condition on admission—A vertical contused wound six inches in length, quite parallel but a little external to the sagittal suture, situated on the left parietal region, was seen, exposing at its floor an irregular fracture and depression of the left parietal bone. Through the rent was issued out a greyish red tumour the size of a mango, which was found to be the parietal lobe of the left cerebral hemisphere. She was quite unconscious, struggling, with dilated pupils, stertorous breathing and weak intermittent pulse.

Operation—Dr G. G. Watve, M.D., Assistant Durbar Surgeon, Kolhapur, having washed the wound thoroughly with H.P. lotion, extracted the loose fragments and relieved the compression by elevating the depressed piece. The protruded brain substance was gently put back in the cranium and the skin wound was sutured with silver wire.

Progress of the patient—For the first few days her urination and defecation were involuntary. There was complete paralysis of the right side of the whole body, accompanied by loss of sensation and motion. She was able to swallow liquid food only. She could neither open her left eye nor could she close the right one. She could not sleep without a sedative but used to struggle in bed with occasional shrieks and cries. Her conjunctive and pupils were insensible to touch and light respectively. Her pulse usually frequent ranging from 120 to 140 per minute. Temperature varied from 101° F to 104° F. Respirations about 40. Within a fortnight of stimulant and tonic treatment, nutritious diet and careful nursing, she began to regain partial consciousness as witnessed by her ability to open her jaws and put out her tongue when she was several times roused to do so. She also opened her eyes and turned them to the movements of her relatives close by. She could neither utter nor articulate but would cry bitterly, and shed streams of tears at the sight of her mother and the only daughter, aged about eight years. She occasionally attempted to speak in haphazard way to ask her mother, "what is done for her," but she could not express it properly.

The sutures came away naturally, and the brain substance began to exfoliate. There was profuse hæmorrhage on slightly touching the wound to remove the slough. Gradually much portion of the parietal frontal lobes of the left hemisphere had decayed, leaving a regular pit underneath. Symptoms then began to grow worse, and she died on the 24th May 1900, surviving for 50 days after the accident.

THE
Indian Medical Gazette
 JANUARY, 1903

SURGEON GENERAL BEATSON ON THE
 INDIAN MEDICAL SERVICE

A people which takes no pride in the noble achievements of remote ancestors will never achieve anything worthy to be remembered with pride by remote descendants

MACAULAY *Hist*, Ch XII

WE had looked forward with expectation to this article of Surgeon-General W B Beatson on the Indian Medical Service, which has appeared in the *Asiatic Quarterly Review* (October 1902, p 272, &c)

Surgeon General Beatson is one of the veterans of the Service, having retired with the rank of Surgeon-General so long ago as 1883, on resigning his post as Deputy Surgeon-General of the Lahore Division

We confess to having expected a much fuller and more elaborate history of the service, as it is, the article runs to only 47 pages, and is very largely taken up by quotations from old books of travels in India. However, we welcome the article as an instalment of the History of the Service, and congratulate the veteran on his devotion to his old service and on the aid he has given in keeping alive its history and traditions. We are firmly of Macaulay's opinion as to the value of the prestige of history and believe that the nation, people or the service, which can look without a thrill of pride on the great achievements of its predecessors, will never do any thing which will be remembered by posterity. It is for this reason, among others, that for the three past years we have published articles in each January number on the history of the Indian Medical Service, and we believe that they have proved of interest to all, and should be of special value to the younger members of the Service and make them proud of its achievements and traditions.

To turn now to Surgeon-General Beatson's article

It begins by pointing out that the necessity for a medical service was early impressed upon the trading companies by the sufferings of their merchants "from the pestilential nature of the

climate and the too great conviviality of their habits"

The first "pre-service" Surgeon mentioned by Surgeon-General Beatson is John Fyfe who visited Surat in 1674, though, as Lieut-Colonel D G Crawford, I.M.S., has shown, Abel Price, who perished at the Amboyna Massacre and the famous Gabriel Boughton preceded him

The article then goes on to show that when the English began "to send merchants to the markets and Ambassadors to the Courts of the Indian Princes," the necessity of an organised medical service became evident, the career of Gabriel Boughton is then described, and as regards what Crawford has called "the legend of Gabriel Boughton," the present writer concludes that Boughton was a real person and acquired the favour of Shah Jehan and his family, though not in the romantic way usually described. Boughton died a martyr to his zeal in the service, but we cannot agree with the Surgeon-General that his name has passed into "oblivion," on the contrary, no name is better known, and indeed the famous legend—repeated in every school-boy's history—grew up within 25 years of his death

In the year 1709, we find the following names of medical officers of seven Company's ships sailing to Bengal, viz, Robert Tonge, William Pennycoate, Oliver Coult, Thomas Stewart, Hugh Campbell, Oliver Mow, and the celebrated William Hamilton

The Surgeon-General has nothing to tell us of the first six, but devotes several pages to the career of William Hamilton. This we need not here repeat, as it was fully dealt with by Crawford in the *Indian Medical Gazette* for January 1901. We may add that Surgeon-General Beatson is not aware that the monument to Hamilton is still preserved in Job Charnock's tomb in the grounds of St John's Church, Calcutta. Surgeon-General Beatson then mentions the establishment of an hospital at Calcutta, and sketches the career of *John Zephaniah Holwell*, the only medical man who "has ever governed Bengal—whose Black Hole monument has now been re-erected by His Excellency Lord Curzon, and of which we give an illustration in the original condition as it was 100 years ago.* We find in this article a fuller note on the career

* If we remember aright, there is a picture of Holwell in Government House, Calcutta

of *Charles Weston* than we have elsewhere seen. Weston was at one time an apprentice of *Holwell*, but on *Holwell's* getting into the covenanted service, Weston also changed his pursuits. He served as a militiaman in the siege of Calcutta, and escaped to Chinsura. When *Holwell* left India in 1760 he gave and lent Weston Rs 7,000, from which he made a large fortune in the Tinnetta Bazaar, and left a lac of rupees to the poor when he died, and was buried in Park Street Cemetery in 1810.

William Fullerton's career is next briefly sketched, and then there is a skip to that of *F Buchanan-Hamilton* who entered the Service on 26th September 1794, and travelled and reported on many parts of India from Malabar to the Brahmaputra. He became a Fellow of the Royal Society, and died on 15th June 1829 aged 67. Another name to be remembered is that of *James Burnes*, Physician-General of Bombay and a kinsman of the poet Burns. He served in a politico-medical capacity in the wars between the Company and the Amirs of Sind. "His Narrative of a visit to Sind" was originally a report, but was republished in book-form in 1830. In 1834 while at home he was made a LL.D. of Glasgow, F.R.S., and a Knight of the Guelphic Order by William IV. He came out again to Bombay and became Physician-General and only resigned in 1849, his departure was commemorated by the foundation of four medals to be competed for at the Grant Medical College and other schools in Bombay. He was a Grand Master of Masons and founded a lodge for natives in 1844. He died on September 19th, 1862*.

It may be worth recalling the fact that the great *Oliver Goldsmith* failed to pass the service examination on 23rd September 1758, and so the Indian Medical Service just failed to include in its ranks the poet "Who touched nothing he did not adorn".

Surgeon-General *Beatson* then chronicles the establishment of the Bengal Medical Service by order on 20th October 1763, which came into force on 1st January 1764.

We cannot follow the article in all the interesting matter it treats of. We note that, owing to the number of medical officers who came to India in 1857 with the British troops to suppress

the Mutiny, the Indian Medical Service was closed from 1860 to 1865, but by 1865 "it had become evident that a Medical Service composed of men highly educated, both professionally and generally, was for India an absolute necessity". In 1880 the order, which directed that from March 31st the British and Indian Medical Departments should form one for the medical administration of the army in the three Presidencies, was by many regarded as a death-stroke to the Indian Medical Service, but Surgeon-General *Beatson* claims it to have been a blessing in disguise, in that it accelerated promotion and provided increased pensions.

We lack space to quote from the concluding paragraphs of this article, where the author shows how the Medical Service has been closely associated with the foundation of the Empire in India, and how great has been its influence in harmonising differences, and in reconciling to British rule, the multitudes of tribes and races which constitute the people of India. Its history will tell of how much has been done by I. M. S. officers to increase our knowledge of Indian products and for the development of Indian industries, how they originated and developed great State departments, as the Forest, Postal, Prison and Telegraphs. How they originated and carried on the system of medical education which has provided trained medical men for every town of importance in India. Let us follow Surgeon-General *Beatson* in his enumeration of the men who have helped to build up a "service second to none in prestige, and containing in itself the potentiality of further development and success". Only a few names can be mentioned, *viz* —

H. H. Wilson, *Sprenger* and *Bellew* as representing oriental languages, *Falconer* and *MacLelland*, *Geology* and *Paleontology*, *O'Shaughnessy* and *Macnamara*, *Electricity* and *Chemistry*, *Russell* and *Jerdon*, *Natural History*, *Paton*, the Postal system in India, *Chevers*, *Medical Jurisprudence*, *Cleghorn*, *Thompson*, *Wallich*, *Anderson*, and *George King*, *Botany*, *Brett*, *Morehead*, *Twining*, *Waring*, the two *Goodeves*, *Ronald Martin*, *Maclean*, *Simon Nicholson*, *Fayrer*, *Partidge*, *Birdwood*, *Macpherson*, *Mouat*, *Allan Webb*, *Alexander Grant*, *Hare*, *Forsyth*, *Eatnell* and many others who have represented Tropical Medicine, Medical Education, Surgery, and Sanitation.

* The details given of Burnes's career show that material may exist for a history of the Bombay Medical Service. Will no Bombay I. M. S. man arise and write it?—Ed., I. M. G.

The future historian of the service will have to devote chapters to the above groups of names

Surgeon-General Beatson's article shows how much can be written on the service, and if its perusal should inspire other and younger men to write the inevitable history of the service, we have no doubt that this will prove a source of great satisfaction to the veteran in his retirement and honourable old age

I M S MEN IN THE "DICTIONARY OF NATIONAL BIOGRAPHY"

THE *Dictionary of National Biography* contains accounts of forty-five officers of the Indian Medical Service. This Dictionary extends to sixty-six volumes. Its conception is due to the late George Smith, head of the firm of Smith, Elder & Co, the publishers of the Dictionary. It was originally intended to carry it into the end of the nineteenth century, but it was subsequently extended up to the date of the death of Queen Victoria, on 22nd January 1901. The original plan was completed in sixty-three volumes. Three more supplementary volumes were subsequently added, containing the names of men of mark who had died during the period which had elapsed since the commencement of the publication, with a few which had been accidentally omitted. The arrangement of the work is, of course, in alphabetical order. The first twenty-one volumes were edited by Leslie Stephen, the remaining forty-five by Sidney Lee, who was sub editor of the first twenty-one. The first volume was published in January 1885, and succeeding volumes once a quarter, until the work was completed in 1901.

The officers of the I M S whose biographies find a place in the Dictionary are the following, the dates being those of their service —

- Vol 1 Abel, Clarke (1823 1826), by B D Jackson
- " 1 Ainslie, Whitelaw (Madras, 1794 1815), by B D Jackson
- " 2 Atkinson, James (1805 1847), by Stanley Lane Poole
- " 3 Balfour, Francis (1769 1807), by S L Lee
- " 7 Brydon, William (1835 1859), by Sir Alexander Arbuthnot
- " 7 Buchanan Hamilton, Francis (1794 1815), by Sir Alexander Arbuthnot
- " 7 Burnes, Sir James (Bombay, 1823 1849), by Stanley Lane-Poole
- " 10 Clark, John (1768-1775), by Charles Creighton
- " 13 Crawford, John (1803 1827), by R. K Douglas.

- Vol 18 Esdaile, James (1831 1853), by A T Myers
- " 18 Falconer, Hugh (1829 1855), by G T Bellamy
- " 10 Fleming, John (1768 1813), by B D Jackson
- " 21 Gilchrist, John Borthwick (1783-1809), by Gordon Goodwin
- " 23 Griffith, William (Madras, 1832-1845), by B D Jackson
- " 27 Holwell, John Zephaniah (1732 1760), by H G Keene
- " 28 Hume, Joseph (1797 1807), by J A Hamilton
- " 28 Hunter, William (1781-1812), by E J Rapson
- " 29 Jack, William (1813 1822), by B D Jackson
- " 29 Jeffreys, Julius (1822 1832), by R B Prosser
- " 29 Jerdon, Thomas Claverhill (Madras, 1835 1865), by B D Jackson
- " 33 Leyden, John (Madras, 1803 1811), by Thomas Blyne
- " 34 Lord, Percival Barton (Bombay, 1834-1840), by Gordon Goodwin
- " 35 Macpherson, Duncan (Madras, 1836 1867), by Thomas Secombe
- " 35 Macpherson, John (1839 1864), by Norman Moore
- " 36 Martin, Sir James Ranald (1817 1842), by Norman Moore
- " 39 Morehead, Charles (Bombay, 1829 1862), by Sir Alex Arbuthnot
- " 39 Murchison, Charles (1853 1855), by F F Payne
- " 42 O'Shaughnessy, Sir William Brooke (1833 1861), by A F Pollard
- " 49 Roxburgh, William (Madras, 1776-1813), by G S Boulger
- " 49 Royle, John Forbes (1819 1834), by B B Woodward
- " 49 Russell, Patrick (Madras, 1781-1789), by G S Boulger
- " 49 Russell, Sir William (1797 1831), by Col E N Lloyd, R E
- " 53 Sprenger, Aloys (1843 1859), by Thomas Secombe
- " 53 Spry, Henry Harpur (1827 1842), by E Irving Carlyle
- " 55 Taylor, John (Bombay, 1809 1821), by E Irving Carlyle
- " 56 Thomson, Thomas (1839 1863), by B B Woodward
- " 57 Twining, William (1825 1835), by Stanley Lane Poole
- " 59 Wallich, George Charles (1838 1859), by G S Boulger
- " 59 Wallich, Nathaniel (1814 1846), by G S Boulger
- " 60 Watson, John Forbes (1850 1858), by E Irving Carlyle
- " 61 Wight, Robert (Madras, 1819 1853), by G S Boulger
- " 62 Wilson, Horace Hayman (1808 1834), by Cecil Bendall

- Supplement Vol 1 Bellew, Henry Walter (1855 1886), by D'Arcy Power
 " " 1 Balfour, Edward Green (Madras, 1836-1876), by C E Hughes
 " " 2 Day, Francis (Madras, 1852-1876), by B B Woodward

Three other names, of medical men connected with India, may also be mentioned, John Fijer, M D (vol 20, by Gordon Goodwin), who travelled in India and Persia from 1672—1682, John Sherwen (vol 52, by W P Courtney), served as surgeon of an Indiaman from 1769 to 1771, and James Lind, M D (vol 33, by Thomson Cooper), the author of a "Treatise on the Fever of Bengal," who also served as surgeon of an Indiaman in 1766-67

The officers who are commemorated in the Dictionary have almost all distinguished themselves in the field of either Natural Science or Oriental scholarship. Two names, which certainly should have found a place, are conspicuous by their absence, those of Gabriel Boughton and William Hamilton. The story of Boughton may, for the most part, be mere legend, but there is no doubt as to the reality of the services of William Hamilton, and few men who have served in India, certainly none in the medical service, are more worthy than he of a place in such a record.

Other well-known officers whose biographies might well have been included are James Annesley, Norman Chevers, the Goodeves, Alexander Grant, E C Hare, Sir John Login, John McClelland, W C Maclean, John Murray, Simon Nicolson, E J Waing, Allen Webb, and T A Wise. As the plan of the Dictionary excludes all men who were living at the date of the completion of publication, naturally the names of Sir George Bidwood, D D Cunningham, Sir Joseph Fayrer, Sir George King, W S Playfair and Sir George Robertson, do not find a place in the work.

Separate biographies of the following officers have been written by various authors from time to time. Sir Joseph Fayrer, John Leyden, Sir Ranald Martin, Sir John Login, E C Hare, Charles Morehead, Julius Jeffreys and Alexander Grant.

The only officer of the I M S whose name appears in the list of contributors is Major W W Webb, Secretary of the Army Medical School at Netley, who contributes biographies of the

following men (the dates in brackets are those of birth and death) —

- Vol 40 Napier, Sir Joseph, Lord Chancellor of Ireland (1804 1882)
 " 41 Nugent, Sir Richard, Lord Deputy of Ireland (*Obit* 1460)
 " 41 Nugent, Richard, Baron Delvin (*Obit* 1538)
 " 41 O'Brien, William, Earl Inchiquin (1638 1692)
 " 43 Parke, Thomas Heazle, Surgeon Major, A M D (1853 1893)
 " 43 Parkes, Edmund Alexander, Surgeon Major, A M D (1819 1876)
 " 44 Pengelly, Sir Thomas, Judge (1675 1730)
 " 47 Rees, George Owen, Physician (1813 1889)
 " 49 Roget, Peter Mark, Physician (1779 1869)
 " 49 Russell, James, Professor of Surgery, Edinburgh (1754 1836)
 " 49 Russell, James, Surgeon (1786 1851)
 " 50 Sayer, Augustin, Physician (1790 1861)
 " 51 Seymour, Edmund James, Physician (1796 1866)
 " 51 Shaw, Peter, Physician (1694-1764)
 " 52 Shearman, William, Physician (1767-1861)
 " 52 Sherard, James, Physician (1666 1738)
 " 53 Smith, Edward, Physician (1818 1874)
 " 53 Smith, William Tyler, Obstetrician (1815 1873)
 " 55 Taylor, Alfred Swaine, Medical Jurist (1806 1880)
 " 55 Taylor, Robert, Physician (1710 1762)
 " 56 Thompson, Gilbert, Physician (1728 1803)
 " 56 Thomson, Robert Dundas, Physician (1810 1864)
 " 57 Townshend, John, Colonel, and M P (1789 1845)
 " 57 Tuthill, Sir George Lemon, Physician (1772 1835)
 " 57 Tweedie, Alexander, Physician (1784 1834)
 " 59 Waldegrave, Sir William, Physician (*floruit* 1689)
 " 59 Warren, Pelham, Physician (1778 1835)
 " 59 Wasey, William, Physician (1691-1757)
 " 60 Webb, Francis Cornelius, Physician (1826 1873)
 " 60 Webb, Sir John, Dir Genl, Ordnance Medl Department (1772 1852)
 " 60 Webb, John, Antiquary (1776 1869)
 " 61 Wigan, John, Physician (1696 1739)
 " 61 Willan, Robert, Physician (1757 1812)
 " 61 Williams, William Henry, Physician (1771 1841)
 " 62 Wilson, James Arthur, Physician (1795 1862)
 Supplement Vol 1 Burrows, Sir George, Physician (1801 1887)
 " " 2 Harley, George, Physician (1829 1896)
 " " 3 Johnson, Sir George, Physician (1818-1896) *

* For the above it will easily be guessed that we are indebted to Lieutenant-Colonel D G Crawford, I M S, now on furlough.—ED, I M G

ANNUS MEDICUS, 1902

AS is our custom we in this issue briefly review the Medical, Surgical and Sanitary work done in India during the past year

The year began with the holding of the Nag-puri Malarial Conference, at which medical officers from all parts of India attended, and which we have already called a landmark in sanitary progress in India. Perhaps the most remarkable part of the work done at this Conference was not the many admirable papers on methods of the prevention of malaria, but the opening up of the great question of the nature of chronic malaria, that is, the cases which we have been for long calling "malarial cachexia," those in which the parasites cannot be found, and those in which an enlarged spleen is the chief feature. We consider these the most important, for it is these chronic cases which die, hence the importance of understanding them. It was for this reason among others that we were glad to give space for the several papers on the eternal *kala-azar* question, for we felt that the discussion on these matters could not but help to clear up our ideas on the nature of the continued fevers of India, and throw light upon those great epidemics of fever which have usually been called malarial, but which, except the Lower Bengal (Burdwan) epidemics, have never been properly investigated. In fact, epidemic malaria in this form would seem to be a peculiarity of India, and epidemics such as ravaged the Punjab in the autumn of 1900 and Gujerat and parts of Rajputana at the same time need very special investigation which hitherto they have not got. Epidemics of this kind are more deadly than even plague and cholera.

As regards plague it has pursued the tenor of its way, practically uninfluenced by "plague policy" of any kind. Plague has now passed its sixth year of persistence in India, we may look forward to its disappearance in a few years, but of this so far it has given no sign. One thing is certain, sanitation has not failed to eradicate plague, because sanitation never got the chance, it may be it never could get the chance, but plague has been fought not so much on sanitary lines as on political. It is the people themselves who are to blame for the stay of plague. Countries have the diseases they deserve. The stay of plague is a measure of the insanitary condition of the people of India, and after tentative

efforts to apply to a partial extent the principles of hygiene in the prevention of this great disease the Government of India with a full knowledge of the causes and of the difficulties decided that the attempts to control plague on the lines it has been successfully controlled, in Glasgow for instance, were useless and were doing more harm than good. This is not a confession of sanitary failure, it is only an acknowledgment of the real difficulty of enforcing modern sanitary laws upon an unwilling people, with the certainty that even if the people approved it would even then be difficult to carry out all the requirements that sanitation demands. Meantime efforts are everywhere directed to improving the condition of our great towns and cities. Fresh air and sunlight could they be allowed to enter the close and narrow *busties* and *chawls* of Calcutta or Bombay would do more to banish plague than all the thousands of rupees spent on chemical disinfectants, the result of which we can only call disappointing.

Another subject which has occupied our columns much during the past year is that of the extent to which typhoid nowadays exists among the Natives of India. That there is a strong consensus of opinion as to its existence among Indians there can be no doubt, but native medical practitioners, as a rule, still hold out against this view and persist in calling clear cases by such all-embracing and obscurant names as "remittent" or "infantile remittent" fever. We need say no more on this subject as it has been discussed during the year in our columns by Rogers, Lamb, Adie, Duer, Stokes and others.

In connection with typhoid we have several times chronicled notes on that allied disease which bacteriologists have called "paratyphoid,"—how far this disease, due to the *b coli*, exists in India is not known, but it is not improbable that such will soon spring to light.

The past year has not been a great cholera year, the disease, as usual, has been in evidence in many places, but no great epidemic has been recorded.

Dengue, which has prevailed in many parts of the further East, reached Burma early in the year, and has since invaded Bombay and Calcutta. It is not at present virulent in type, and has caused but little excitement.

Before leaving the continued fevers of India we must mention that severe and fatal disease, cerebro-spinal fever, whose spread and increased recognition we have already chronicled

We have also recorded the recognition of cases of "Epidemic Dropsy" in Calcutta, Madras and Bombay, and recently we have heard of some cases strongly resembling it in Backergunge district.

The past year has led us to what seem to be clearer ideas on that great disease, dysentery, and evidence is accumulating of the difference between two main forms, the bacillary and the amœbic.

Among other subjects discussed in our columns have been that of cancer in natives of India. Niblock, Neve, and Newman have contributed papers which show that the disease is not uncommon in India, and any theory of the etiology of cancer based upon its supposed absence in India or upon its supposed antagonism with malaria are foredoomed to failure.

Of other papers of great interest which we have published during the year a few only can be here mentioned, viz, those on climatic buboes by Caddy and Duei, on snake-bite and its treatment, by Carr-White, Munson and Kenrick, on scurvy, by Gueg, on indigenous drugs, by H. C. Sen and G. N. Sen, on the pathology of mycetoma, by Maitland, on jail tuberculosis, by Waters, and the series of papers forming our special medico-legal number.

As usual we have had a long list of good surgical papers for example, those by Maitland, Niblock, and Robertson of Madras, that of the removal from the stomach of 55 rupees by Dennys, that on sigmoidoplexy by Mon, that on the surgery of elephantiasis by R. D. Murray, and many others. The admirable discussion on the surgical treatment of liver abscess at the South India Branch of the British Medical Association must also be mentioned, and the spirited and useful correspondence, started by Pridmore of Bhamo, on the causes of involuntary iridectomy.

We must not omit to mention the interesting notes from the Continental Eye Clinics which we are still publishing from the pen of Captain R. H. Elliot, F.R.C.S., I.M.S., who is spending his furlough in touring round the eye hospitals of Europe. The articles have been much appreciated by our readers, and we hope that men on furlough will follow this good example, and send us contributions of a like nature.

Among the books published by medical officers of the Indian services during the year we may mention Giles' "Handbook of Mosquitoes," Collis Bury's "Legal Medicine,"

Bank's "Hygiene for India," Andrew Buchanan's "Malaria," Bedford's "Urine Analysis" and "Chemistry," Walsh's "History of Murshidabad," and several books on Malaria by Ronald Ross. To this list we may add the just published "Naturalist in the Indian Seas" by Alcock, and "Physician and Friend," or the letters of Dr. Alexander Grant, I.M.S., to the Marquis of Dalhousie.

In conclusion, we have to thank our many contributors for the valuable aid they have given during the year. That this Gazette has largely become the "brief chronicle and abstract" of all medical matters in India is a source of pride to the editorial staff, and it would not have become what it is had it not been for the hearty co-operation of medical officers from all parts of India.

Current Topics.

THE BACTERICIDAL EFFECTS OF HUMAN BLOOD

IN a valuable article in the October issue of the *Journal of Hygiene* (vol 2, No 4) Professor A. E. Wright, of Netley, and Captain F. N. Windsor, I.M.S., discuss the bactericidal effect exerted by human blood on certain species of pathogenic micro-organisms, and they show from experimental data that human serum has a powerful bactericidal effect upon the typhoid bacillus and the cholera vibrio, while it is without any such effect upon *staphylococcus pyogenes*, *b. pestis*, *micrococcus melitensis*, and apparently on *streptococcus pyogenes*, and *b. diphtheriæ*.

They also show that while inoculation with living cultures of cholera, is, as has been shown in connection with Haffkine's anti-cholera inoculations, practically unassociated with risk, and while inoculations with small quantities of living typhoid bacilli are (judging from the event of an experimental inoculation undertaken by one of the writers, and from the immunity from accident which has attended wholesale manipulations with this micro-organism) associated with only slight risk, the results are quite other in the case of even minimal inoculations of plague and Malta fever cultures. The extreme risk which attaches to the inoculation of even minimal quantities of living plague bacilli is attested by the numerous cases of plague which have supervened upon the accidental inoculation of infected material into small superficial scratches.

The risk attaching to even minimal inoculations of the *micrococcus melitensis* is less well known. Six cases of the disease have occurred in connection with bacteriological work on

Malta fever undertaken at Netley, and two further cases have originated at the Royal Naval Hospital, Haslem, and in the Philippines respectively, in connection with bacteriological work.

Of the cases at Netley one originated from an accidental prick with a needle of a syringe containing a Malta fever culture, a second arose in connection with an experimental inoculation, a third has recently occurred in connection with the accidental projection of the end of a contaminated capillary sedimentation tube into the eye. The three other cases at Netley arose apart from a recognised inoculation in the case of observers working with living cultures. It would be difficult to conceive of inoculations with quite minimal quantities of cultures being so effectual in the case of micro-organisms subject to the bactericidal action of the blood and lymph.

THE ROYAL SOCIETY MALARIA REPORTS

THREE have now been issued seven reports to the Malaria Committee of the Royal Society, the last of which we dealt with in our November issue. The other reports contain much of interest and value to all who are at work on malaria problems. The first two we discussed at the time of issue, and we now propose to give our readers a brief account of the contents of the remaining reports.

The third report, dated 31st December 1900, contains articles by Drs Stephens and Christophers on (1) the agglutination of sporozoites, (2) the malarial infection of native children, (3) the destruction of anopheles in Lagos, (4) a note on malarial fever on Railways under construction, and (5) on the segregation of Europeans. The other half of this report deals with the investigations, in East Africa, of Dr C W Daniels, on the distribution of anopheles in Africa and on prophylaxis, all these papers are of special interest and value.

The fourth series, dated 30th March 1901, is entirely devoted to Mr S R Christophers' paper on the Anatomy and Histology of the adult female mosquito. It will be found the most complete account of this subject and is beautifully illustrated with six plates.

The fifth series is of particular value and contains Drs Stephens and Christophers' papers on (1) the proposed site for European residences in Freetown, (2) mononuclear leucocytes diagnostic of malaria, (3) malarial fever without parasites, (4) the toxicity of blood in malaria and blackwater fever, and eight cases of blackwater fever. It also contains four more papers from the pen of Dr Daniels on his observations on anopheles and on blackwater fever in British Central Africa.

The sixth and seventh series deal with Dr Stephens and Christophers' work in India and contain the following papers—

(1) The relation of malarial endemicity to species of anopheles, (2) some points in the

biology of the species of anopheles found in Bengal, and (3) the relation between enlarged spleen and parasite infection.

The seventh series contains Stephens' and Christophers' reports from India on (1) the classification of Indian anopheles into natural groups, (2) and (3) the relation of species of anopheles to malarial endemicity, (4) an investigation into the factors which determine malarial endemicity—a subject which we dealt with editorially in November, and (5) a note on bodies in the salivary glands of anopheles. The series so far issued concludes with a note by Professor Ray Lankester, FRS, on a convenient terminology for the various stages of the malarial parasite, which has also been elsewhere published.

The whole series is valuable and should be in possession of all who wish to keep up with the increasing difficulties of the many problems of malaria.

THE SPLEEN TEST OF MALARIA

OUR readers may remember that at the Nagpur Malaria Conference there was a discussion on the value of the "spleen test" of malaria, and Captain S P James, IMS, summed up his paper by saying that the estimation of the percentage of *adults* with enlarged spleens is of no value as an indication of the amount of malaria, and the liability to infection, but that in *children* the estimation of the percentage of young children with enlarged spleens gives a fair indication of the prevalence of malaria and for purposes of comparison, (especially if the ages of the children and the time of year are noted,) will prove a very useful and easily applied test. The subject is fully discussed by Drs Stephens and Christophers in the 6th Series of Royal Society Malaria Reports. The authors point out that previous arguments in favour of this test are not conclusive, because no data have hitherto appeared in which the spleen rate and the parasite rate have been simultaneously determined. They also point out that "intense malaria may exist without any corresponding affection of the spleen," but they go on to state, "in India there exists little doubt that among Natives and Europeans enlarged spleen is one of the commonest occurrences in those suffering or who have suffered from malaria," as the records of all Indian hospitals show. The writers mention having seen these well known "malarial cachexia" cases, but "on examining them microscopically they consistently showed a complete absence of parasites." In 80 such cases they found neither parasites, pigmented leucocytes nor any mononuclear increase which they have shown to be characteristic of a recent infection, and in *post-mortem* examination of six cases no parasites were found in the bone, marrow or spleen, though pigment was present in variable amount. Our authors then say that

such cases "no doubt represented past cases of actual infection with parasites, but they tell little of the actual malarial endemicity of Calcutta"

They then state certain facts, and draw the following conclusions —

(1) A high endemic index may exist without any appreciable spleen rate (Africa)

(2) A high spleen rate may exist in adults without a corresponding parasitic infection

(3) In Bengal among children a high spleen rate is a fair indication of parasitic infection

(4) The spleen rate, unlike the parasite rate, increases up to a certain age limit, and may be considerable when the parasite rate is nil

THE BENGAL MEDICAL LIBRARY

WE desire to again draw attention to the valuable lending Medical Library which now exists in the office of the Inspector-General of Civil Hospitals Bengal, for the use of medical officers in that Province. Colonel Hendley, I.M.S., has been able to induce Government to give Rs 1000 a year for new books

The following are among the new books which have been lately added to the Library —

Hare's "*Practical Diagnosis*", Lauder Brunton's "*Disorders of Digestion*", Dowse's "*Pocket Therapist*", Waldo's "*Rules of Hygiene*", Politzer's "*Atlas of Diseases caused by Accidents*", Hoffman's "*Atlas of Legal Medicine*", Jakob's "*Clinical Diagnosis*", DaCosta's "*Atlas of Operative Surgery*", Darwin's "*Origin*", Moller's "*Veterinary Surgery*", Brouardel's "*La Lutte contre la Tuberculose*", Edwards' "*Small-pox*", Parkin's "*Physiology*", Brower and Bannister's "*Manual of Insanity*", Yari's "*Military Ophthalmology*", "*The Encyclopedia Medica*" (all published volumes), Henameter's "*Diseases of Stomach*", Bon's "*Diseases of Intestines*", Paul Richert's "*L'art et la Médecine*", Vivian Poore's "*Medical Jurisprudence*", Collis Barry's "*Legal Medicine*", &c, &c

The want of a good reference Medical Library has been long felt in Bengal, and this want is largely supplied by this well-selected library which now contains several thousand volumes. A complete catalogue has also been printed. We should like to hear of similar libraries being started in every province in India.

THE announcement that Duval and Bassett (*American Medicine*, 13th September 1902) have discovered the bacillus of dysentery (Shiga's) to be also a cause of the summer diarrhoea of children will not tend to make the clinical physician rely the more upon the bacteriologist. If this discovery is a fact it must tend to throw doubt upon the specific nature of Shiga's bacillus. It is at least difficult to understand why Shiga's bacillus should produce dysentery in the

Philippines, Japan and India and only produce summer diarrhoea in children in the United States. It is very unfashionable, we know, to cast a doubt upon the work of the bacteriologist, but such occurrences as the above as well as the discovery that the bacillus enteritidis was the cause both of Asylum dysentery and a "rice-pudding" epidemic of diarrhoea at St Bartholomew's should give us pause

WITH reference to a letter which appeared recently in our correspondence columns which exposed an attempt to foster the idea that Indian *cheruts* contained opium, the following note contributed by an esteemed correspondent who is in a position to know is of interest. He writes "that the tobacco growing districts for *cheruts* are Burma and Madras, and very little opium is grown there. I have no information as to opium in Sumatra, Java and Borneo, where the covering leaves are grown. The opium-growing districts are Bihar and the United Provinces, and the tobacco of these parts is said to be entirely for native use, *i.e.*, in *hookas*. Opium is grown on two sorts of land, irrigated and non-irrigated. On irrigated land it is grown year after year and tobacco is not grown on this land. On non irrigated land the growth of opium depends upon a good rainfall—at any rate tobacco and opium are grown at the same season, and the crops do not alternate. The opium people laugh at the idea of opium and tobacco being grown alternately, and they ought to know."

This disposes of the attempt to establish a little myth.

ONE of the first fruits of Colonel T. H. Hendley's scheme for having *Medico-topographical Histories* for each district in Bengal is the large, valuable and handsome volume compiled and edited by Major J. H. Tull-Walsh, I.M.S., on the "*History of Murshidabad District*" recently published by Jarrold and Sons, London, price Rs 26. It is a very well written book, and besides containing a medico-topographical account of a famous district, has a brief historical sketch of the early English relations with the powers in India in the stirring days of the Black Hole and Plassy. It also contains sketches of the Chief Native Families in the district of Murshidabad. Major Walsh is to be congratulated on having brought out such a handsome volume.

THOSE who are interested in art or in the history of medicine could not do better than possess themselves of the handsome volume recently published by Dr Paul Richert (Paris, Gaultier Magnier & Co), entitled *L'art et la Médecine*. It contains very numerous and beautiful engravings illustrating the history of medicine as shown in famous pictures, engravings, statuary and other branches of art.

THE following remark, which we came across in reading Major Tull-Walsh's *History of Murshidabad*, is worth copying, as it throws light upon the relative incomes made by surgeons of the Honourable Company and its other officers. A certain Dr. Weston wrote—"what could I expect from following the medical profession, when I saw a regular-bred surgeon and so clever a man as Mr. Holwell charge no more than fifty rupees for three months' attendance and medicine"

WITH this issue, commencing Volume XXXVIII, we have added to our Editorial Staff the name of Captain C. Duer, M.B., F.R.C.S., I.M.S., of Rangoon, to represent the Province of Burma. *Quoil bonum, bene, felix, faustumque sit*

THE value of the Prize presented to Major Ronald Ross, by the terms of the Nobel Bequest, is no less than £7,800, or about one lac of rupees. Four such prizes were given, for various branches of science, &c. We heartily congratulate Major Ross on being selected to receive such a magnificent prize, and are proud that one of the first of the Nobel rewards fell to a former member of the Indian Medical Service.

It is expected that the Annual I. M. S. Dinner will be held in Calcutta in the end of January.

THE Holwell Monument was unveiled by His Excellency the Viceroy on 19th December 1902, on the site of Holwell's original monument, as depicted in the picture we reproduce in this issue.

As we go to press we have received a copy of Captain S. P. James' admirable monograph on *Malaria in India*. It is a volume of the new series of "Scientific Memoirs of Officers of the Medical and Sanitary Departments of the Government of India" (note change in title). We will review the volume in our next issue.

CAPTAIN S. P. JAMES, I.M.S., and Captain W. Glen Liston, I.M.S., have also in the press a book on *Indian Mosquitos*, and their identification, which should prove extremely useful.

Review

The Practitioners' Guide—By J. W. CARR, T. PICKERING PICK, ALBAN DORAN and ANDREW DUNCAN. Longmans, Green & Co., London, 1902. Price 21s net, pp. 1107.

THIS is a single-volume Dictionary of Medicine and Surgery, and is intended as a book of reference for the busy practitioner. The book is made as practical as possible, pathology and etiology are but briefly touched upon, but the symptoms, diagnosis and treatment are more

fully discussed. The volume is written by Dr. J. Walter Carr, of the Royal Free Hospital, T. Pickering Pick, of St. George's, Alban Doran, of the Samaitan, and Andrew Duncan (I.M.S., retired), of the London School of Tropical Medicine.

The subjects of gynaecology and diseases of women occupy a large portion of the volume, these subjects being deemed to be "a considerable and important part of the work of men in general practice," but after careful consideration midwifery is altogether excluded.

Tropical diseases receive special attention, for it is considered that a one-volume book like this would be of special use to medical men in tropical countries, as it could be carried out with them on their journeyings.

Taking the book then to be the *Guide* it is intended to be, we have little hesitation in saying, that it is a success. It deals with a very large number of subjects, but the articles are wonderfully complete and practical, in addition to being alphabetical it has a good index—a sore want in Quain's bigger Dictionary.

Turning now to some of the articles. In the article on ber-beri, we note that the writer considers it a new disease, in that some 20 years ago no cases were seen in the Seaman's Hospital, more probably they were not diagnosed, as Malcolmson of Madras described the disease in 1835. The very brief article on snake-bite is remarkable for absolutely omitting to make any mention of the antivenene treatment, and, indeed, the few remarks made deal with very general treatment only. In the article on black-water fever Duncan, we are glad to see, does not put much faith in the quinine poisoning theory. In the article on chicken-pox, we note that it is said it "occurs mainly in the young," this is true for Europe, but in India it is a very common disease of adults.

Duncan's article on cholera is good, and several good instances of outbreaks from his own experience are given, but we are rather surprised to find the immunity of Sonepore Fair in 1872 attributed to Deputy Surgeon-General Tuson's sulphur burning. More probably the sulphur fires were only one of the sanitary measures taken by Tuson. The paragraphs on the treatment of cholera are very complete and convey a lot of information in a short space. The author thinks most of Johnson's castor oil evacuant plan. The chapter on dysentery is good, and for the space allowed wonderfully complete, and the description of dysenteric stools especially good.

We especially commend Duncan's article on heat-stroke, the writer has had more than one unfortunate personal experience of it, and has consequently paid special attention to it. He details the Sambon heresy, but gives many good reasons for rejecting it. We also note that he recommends helmets to be lined with red or

orange coloured flannel, and similar coloured shirts and spinal pads. From the writer's military experiences, we would have expected a strong protest against the military practice of wearing tight belts, &c, so that a soldier is tied up like a trussed fowl. This, we believe, is the most potent predisposing cause of heatstroke on the march. It is the more absurd, as the same officer who marches thus tightly trussed would be the first to laugh at it if he was asked to go out snipe-shooting in the same kit.

The article on *kala-azar* gives a very full synopsis of the views of Giles, Rogers and Ross. That on liver abscess follows Cantlie's division into supra-, intra- and sub-hepatic abscesses, which is by no means established. The article is a good résumé of what is known on the subject.

The article on malaria is compressed into 14 columns, but is a very good up-to-date review of what is now a very big subject, but we doubt if it was worth wasting nearly a column on Major Yari's "Malarial Affections of the Eye," for example, who will believe in a "superficial ulcer of the cornea readily cured by quinine," or even if cured by quinine where is the proof that it is malarial? We thought that the time had come for dropping this abuse of the word malaria. The article on scurvy is good, and it is pointed out that ship beri-beri in some respects resembles scurvy. It is worth noting that in the article on typhoid fever under the head "Etiology," the first mode of infection discussed is the aerial.

*We have only mentioned tropical diseases in the above brief review, but the other articles are equally good, and when the stated limitations of the volume are remembered, we believe the book to be a good and sound guide as far as it goes. It is a book which might with advantage find its way into the boxes of Field Hospitals, along with Davies' hygiene. In small space it contains much. It is excellently printed in large type, and indeed it must be described as a successful publication.

ARMY MEDICAL ORGANISATION IN THE FIELD

THE SANDER PRIZE ESSAY

(Continued from p 489 of Vol XXXVII)

PRINCIPLES OF FIRST AID

Of the wounds received in recent warfare more than 90 per cent. (as shown in the Spanish American, Philippine and South African wars) are made by infantry fire, 5 to 10 per cent. by artillery fire, and only 1 to 2 per cent. by side arms.

28 Intelligent first aid to the wounded, therefore, requires some knowledge of the projectile and of the wound it inflicts. The bullet of the modern military rifle is cylindro-conoidal in shape and consists of a lead core with a hard casing of cupro-nickel or cupro-nickel steel. It ranges practically point blank up to 600 yards and can inflict a mortal wound beyond two miles. It is characterized by small diameter, lightness, high velocity, long range, flat trajectory and great resistance to deforming violence. It perforates cleanly all soft tissues and spongy bones

at all ranges, its destructive effect upon shafts of long bones and organs containing much fluid increases as the range decreases and within 600 yards may act with explosive violence. Its flat trajectory and velocity render it likely to pass through, or injure several men, often producing multiple wounds on the same man, and seldom remaining in the body at short or middle distances. On the other hand, its long range will often cause the contending lines to open fire when still a mile apart, at which distance it loses much of its striking force and is not unlikely to lodge. That on account of its small diameter and conoidal shape, it may pass through important structures without doing much injury, is often strikingly shown. The track may be quite long, but is generally straight from the hole of entrance to that of exit. These holes are quite small and so much alike that often they cannot be distinguished.

29 The feature of these wounds of most importance to the surgeon is that they are aseptic and, if uncomplicated by hemorrhage or fracture almost always heal within a week or ten days without suppuration, hence the rule that the great majority of them not fatal within a few hours, are followed by rapid recovery. The chief endeavour of medical officers and hospital corps men, therefore, must be to prevent their becoming infected by contact with hands, instruments or clothing. *Whoever fingers or probes a wound often inflicts a greater injury than the bullet which produced it.*

30 First aid, therefore in most cases, consists simply in covering the wound with a dry antiseptic dressing so as to prevent it from becoming infected. No water should be used. The first-aid packet contains all the essential articles for the battlefield and its prompt and intelligent application has saved more lives in the recent past and will save more in future than all other forms of primary treatment. The regulation which requires each soldier to carry one first-aid packet is very important and should be strictly enforced. The manner of carrying it should also be clearly defined. It should not be sewed in the blouse which, in warm weather, is likely to be thrown away or lost, the safest place would appear to be on the band of the trousers or, still better, as suggested by Senn, inside the cartridge belt. Every enlisted man should be taught to apply the first-aid dressing not only on his comrades but on his own person and, in doing so, should be cautioned not to touch the wound with his fingers or his clothing. If a wound cannot be dressed at once it should be left exposed to the air until assistance comes.

Although every man should understand the application of the first-aid packet so as to help himself or a comrade in time of need, yet it is much better, if skilled assistance be near at hand, to wait for it, for much depends upon the way first-aid is rendered and the wound dressed, it has even been said, and doubtless with much truth, that "the fate of the wounded rests in the hands of the one who applies the first dressing."

The wounded being thus efficiently protected on the battlefield or at the dressing station, may never need another dressing, at all events, he can generally be safely removed to the field hospital without another examination, provided there are no other reasons to prevent his transportation.

31 Bleeding is the one dangerous condition which requires immediate help, therefore, every man should know how to apply a tourniquet on a comrade, and on himself when possible. For this purpose a handkerchief is the most useful thing, and the thoughtful soldier will always carry one about his person. The indiscriminate use of the tourniquet, however putting it on when uncalled for or using more constriction than necessary, may be productive of much mischief and should be carefully guarded against. The great majority of gun shot wounds do not bleed much, in some the hemorrhage is too rapidly fatal for help (except perhaps by the wounded man himself or his comrade) and in many it will have ceased when aid comes, or become reduced to slight oozing readily stopped by a compress. It will be wise, therefore, for medical officers at the dressing or ambulance stations to loosen tourniquets in order to ascertain if the same degree of constriction, or any at all, is still necessary.

THE LINES OF SURGICAL ASSISTANCE IN OPERATION

32 It is the opinion of most authorities that, in modern warfare on account of the quick and murderous fire to which an attacking force is exposed, no relief to the wounded along the line of fire is possible during the heat of the action. To reach them we must wait for an advance of the troops, a lull in the fight or the close of the battle. Litter bearers on or near the firing line, besides being in the way, make conspicuous targets so that they and their patients are in much greater danger than the combatants, without corresponding advantage to any one. The wounded man lying on the ground has better chances of escaping further injuries than if picked up and placed on a stretcher. It is desirable however that, in each regiment, a medical officer and orderly should be near the line of fire or between it and the dressing station, to give such help as he is able under the circumstances direct, and supervise the litter bearers as soon as they appear, and for such moral effect as his presence may produce.

As the division approaches the enemy and takes the formation of battle, the order is given for all the ambulances detached with

regiments to fall out and join the ambulance corps. Only the junior medical officer and orderly of each regiment accompany the troops into action. The acting steward and 2 H. C. privates detached with each regiment (para. 23) fall out, unite behind the brigade and report for duty at the dressing station.

The chief surgeon determines at which point the ambulance corps is to divide if at all, into its component companies, each to follow its respective brigade. At this point all ambulances and wagons stop for the present by the roadside, until dressing stations are located and roads investigated.

Meanwhile, and without delay, each company, under the direction of the three medical officers for duty at the dressing station (in addition to those already in front with the regiments) forms rapidly and, with the surgical pack mules (para. 20) advances to the rear of its corresponding brigade, as near as practicable to the second line (para. 4). All privates carry the pouch, sling and a full canteen and each two bearers a folded litter at the carry, in this manner enough litters will be brought to the front for all needs. An acting steward carries a red guidon to mark the dressing station (para. 238, A. R.).

As the company advances, it attends to all the wounded found on the way, these are collected, as many together as possible, in sheltered places for future removal to the ambulance station, and the necessary attendants left with them. As the firing line becomes thoroughly engaged, the chief surgeon or senior medical officer present, after consulting with the brigade commander if practicable, determines the location of the dressing station. The stewards and nurses quickly prepare it for the reception of patients, cutting off branches, underbrush, improving the approaches, strewing grass on the ground, procuring drinking water, &c., the packers take down and open the chests.

The litter bearers, under the immediate instructions of all available acting stewards and the general direction of the junior regimental medical officers, start out from the dressing station to the front as soon as the wounded can be approached and carried off.

33. The commanding officer of each company having inspected his ambulances and wagons (one substance and two baggage wagons) takes measures for their immediate advance to the dressing station or as near it as possible under the immediate direction of the acting assistant quartermaster.

It will generally happen that ambulances cannot reach the dressing stations (para. 7). The point at which they are obliged to stop will be the AMBULANCE STATION (*Ilagen Halteplatz* of the Germans, *Relu d' Ambulance* of the French). To this point all patients from the nearest dressing station or stations (of whatever brigade or division) will be brought. Preparations, therefore, should be made for their reception and care while awaiting transportation. It will be best to put up only one or two hospital tents or flies at first, and more later if found necessary. All needful restoratives are obtained from the substance wagon, and medicines and dressings from the ambulance chests. The ambulance station is marked during the day by the red cross flag and the national flag (Art. VII, Geneva Convention), and during the night by a red light.

34. The regimental officer on duty at the front renders whatever help he is able during the heat of the action and in the intervals of battle. As soon as the litter bearers appear, he directs, encourages and admonishes them, to the end that the wounded may be carried as soon as possible to the dressing station. Dressing stations under fire is not often practicable nor advisable (para. 32), but in case of severe hemorrhage an effort should always be made to check it. The first duty of the bearers is to carry their patients to a sheltered place, there they can give them water to quench thirst, secure them in the best position on the litter and otherwise prevent their wounds from causing unnecessary suffering while in transit to the dressing station. The arms and accoutrements of each patient should be carried with him to the station, rifles are always examined and, if loaded, the cartridges removed.

After the battle a thorough search is made in woods, ravines, thickets &c., for wounded men of both sides.

Each patient brought to the station is left upon his litter until a medical officer, after examination directs how to dispose of him. If no spare litters are at hand, he is unloaded in a suitable place and the bearers, with closed litter, return at once to the front, or he is carried on directly to the ambulance station.

Wounded men almost invariably complain of great thirst, and plenty of fresh water should be at hand, if possible. Stimulants must be given very sparingly. The medical officers apply or direct the application of the primary and provisional treatment, they prescribe the administration of restoratives, stimulants and hypodermics, hemorrhage is checked, fractures are secured and all wounds protected antiseptically. It is here that the first-aid packet plays a most important part, its correct application being all the dressing that is required in a large majority of cases. No operations are performed at the dressing station being deemed impossible there with proper antiseptic measures and therefore without infecting the wounds.

Men dying or desperately wounded should be left at the station, whatever may be the issue of the battle, until they

revive or improve sufficiently to justify their removal. After the battle, a section of the field hospital can be set up at the station.

TRANSFERRABLE
Date
Rank & Name
Regiment
Diagnosis
Treatment
Urgent
Amb Station
Signature

No

NOT TRANSFERRABLE

(Directions on the back)

DIRECTIONS

In a simple flesh wound, whether the patient is or is not able to walk, tear off both colored borders leaving only the white body of the tag, if a man is severely wounded, unable to walk but able to be transported, tear off the red border, leaving the blue, if a man is desperately wounded and cannot be moved without extreme danger to life tear off the blue border leaving the red.

If treatment is strictly antiseptic, write a capital A after the entry under Treatment.

On Urgent line write what further treatment (not applicable at first dressing station) is deemed urgently required, if any thing.

On Amb Station line, write any additional treatment applied at the ambulance station.

Fasten to clothing of patient (over sternum) with ordinary paper fastener or pin.

DIAGNOSIS TAG DEvised BY THE WRITER

Fifty tags (consecutively numbered) are glued together on the edge so as to be readily detached. The word "transportable" should be on the blue border, and the words "not transportable" on the red border (See para. 35).

35. The last thing done for the patient at the dressing station is to prepare the diagnosis tag and fasten it to his clothing. The tag with colored borders (first advocated by the writer) possesses such distinct advantages that it imposes itself upon every well ordered field sanitary system. The form recommended is appended hereto. The significance of this tag is as follows:—The removal of both colored borders shows at a glance that the patient is not seriously wounded, the removal of the red leaving the blue, that he is seriously wounded but able to be transported at once, the removal of the blue, leaving the red that he is in a desperate condition and should not be moved more than absolutely necessary.

36. Medical officers must not allow patients to accumulate on their hands at the dressing station, but should make use of all available bearers and means of transportation to send them on as quickly as possible to the ambulance station and field hospital. A certain proportion of wounded, from one fourth to one half of the total number, will be able to walk to the ambulance station assisted, if need be, by bearers, they should be sent in groups, each, if possible, in charge of a non-commissioned officer. Men with trifling wounds should be ordered back to the front.

After a victorious battle any necessary help to carry off the wounded should be obtained from the regimental commanders.

In case of a forward movement by the troops, the chief surgeon or commanding officer of the ambulance corps, directs a corresponding advance of the dressing stations or, better still, the formation of new stations with unengaged personnel. So far as practicable, medical officers and attendants at a dressing station should be allowed to complete their work before being transferred to other duties.

In case of a retrograde movement, the wounded are evacuated as quickly as possible, beginning with the less severely hurt, if this evacuation cannot be completed in time and the number of the wounded justifies it, one medical officer and as many hospital corps men as necessary remain with them under the protection of the Geneva Convention.

37. On arriving at the ambulance station the bearers lower the litter to the ground, leaving the patient upon it, they secure another litter and return to the dressing station. The patient, unless there are special reasons to the contrary, should be loaded into the ambulance upon his own litter. In this manner he reaches his cot at the field hospital upon the same litter where first laid and without at any time being removed from it.

At the ambulance station, patients are again examined and given such first aid as their condition requires, all whose dressing was properly applied are at once loaded into the ambulances.

* Every soldier on being mobilized for a campaign should, as in European armies be made to wear attached to a small chain around the neck, a medallion upon which are engraved his name, regiment, corps and domicile. Without such means of identification a large proportion of the killed will inevitably be buried as unknown after a battle of any magnitude. Whoever has seen, like the writer, the solid row of forty "unknown" soldiers buried near where they fell at El Caney, Cuba, fully realizes this fact. The medallion would render unnecessary the filing out of part of the diagnosis tag at the dressing station where time is so precious.

and forwarded to the field hospital. Tourniquets are loosened or removed. Patients with wounds still undressed or badly protected receive special attention. Only such very rare operations as may be immediately required to save life or permit further transportation are admissible at the ambulance station, they should, if possible, be performed under antiseptics. In all patients, the diagnosis tag is verified and completed, or a new one put on.

38 The site of the field hospital having been selected (paras 6, 1, 24), the personnel which accompanied the ambulance corps in advance of the hospital train (para 24) prepares the grounds for the tentage, or if buildings are to be occupied, proceeds to clean them and make all necessary dispositions and all alternations. One or two messengers should be despatched to find the train and guide it quickly to the place. The field hospital, like the ambulance station (para 33), is marked by the red cross flag, and the national flag during the day, and red lights during the night. As stated before (para 6) it will be best to put up only one or two sections at first, and wait until the development of the battle shows whether the remaining section or sections are needed, and if so, where. In case of victory, the latter can be established at the principal ambulance or dressing station, thus saving the wounded the pain and danger of unnecessary transportation, while in case of defeat much of the hospital train can be saved by timely retreat, if such a course be deemed advisable. With a civilized enemy, one of the statutory powers of the Geneva Convention, the interest of the wounded, in case of retreat, can be more carefully considered, and as much of the material and personnel left behind as may be required.*

At least five separate places should be provided at the field hospital, whether in rooms or sheds (if buildings be occupied) or under canvas:

- (1) For the reception and examination of all patients
- (2) For the application of dressings
- (3) For operations
- (4) For cooking, washing, &c
- (5) For wards

As patients arrive at the hospital, the receiving medical officer distributes them according to the nature and condition of their injuries, as told by the diagnosis tags. If buildings and tents be used, the buildings should first be filled, then section by section of the canvas hospital, so that, in case the latter is not full, one section at least may be ready to move onward with the troops or establish itself at one of the dressing or ambulance stations.

The surgeon and attendants whose duties have ceased at the ambulance stations proceed to the hospital.

It should be clearly understood that, except at the close of a campaign, the field hospital is only a temporary shelter from which all patients are to be discharged or transferred as soon as possible. Men with slight wounds healing by first intention should be sent back to their regiments, all other patients must be evacuated to the rear as soon as they have received proper treatment and are able to be transported.

39 The operations performed at the field hospital are only such as are urgent and could not be safely delayed until after admission to a stationary hospital, they are those demanded by the following injuries:

- (1) Bleeding wounds, requiring ligation
- (2) Bloodlessness the result of hemorrhage, requiring transfusion of salt solution
- (3) Fracture of the skull with depression, requiring elevation
- (4) Shattering of the extremities by shot or shell, requiring amputation
- (5) Wounds of the larynx which may require tracheotomy to prevent asphyxia
- (6) Wounds of the bladder which may require external urethrotomy if a catheter cannot be introduced
- (7) Wounds of the abdomen with prolapse of the intestines. Simple penetrating wounds, even with indications or probabilities of visceral involvement, should not be operated on unless the surgeon is an expert, with sufficient time and every reasonable facility for thorough antiseptics.

The surgical wagon contains all necessary appliances for disinfection and sterilization, so that with an adequate and properly trained personnel most of the difficulties special to the field can be overcome.

Diligent care must be exerted to exclude all infectious diseases and to prevent their propagation. The first suspicious cases should be as carefully isolated as circumstances permit. The sterilization of drinking water and the disposal of excreta should receive particular attention (para 27). The prevention of malarial and yellow fevers is best effected by the destruction of mosquitos and the efficient use of mosquito bars.

In a register of sick and wounded, a steward records the name, rank, regiment or corps, injury or sickness and treatment of all patients admitted.

It is difficult, if not impossible, for the regimental surgeon to furnish the list of wounded called for by para. 887, A R. The field hospital is the nearest place at which a complete and reliable list can be made and, in my opinion, the above paragraph should be altered accordingly. When patients are sent to stationary or base hospitals, transfer lists should always be forwarded with them.

The commanding officer of the hospitals makes requisition for all medicines, hospital stores and property on the nearest medical depot, and, if so directed by the chief surgeon, supplies the regimental and other medical officers of the division.

SERVICE OF THE REAR

This service consists essentially of three parts or organisms:

- (1) The stationary and base hospitals
- (2) The evacuation of the sick and disabled away from the field of operations
- (3) The forwarding of medical and surgical supplies to the front.

As already stated (para 8) a personnel of no less than 1 per cent of the command will be required for this service, outside of the necessary force of quartermaster's transport men for duty as teamsters and crews of steamers and trains. It should be noted that the lines of communication, along which must move the wounded to the base and the medical supplies to the front, will probably be that used by a whole corps, if not a whole army, and that there will be a corresponding consolidation of personnel.

Here also (especially at the stationary and base hospitals) may be utilized the volunteer civilian organizations whose co-operation, generally objectionable in front, may be very valuable in rear.

The several parts of the service of the rear, being more or less related and interdependent, will be under the general direction of a lieutenant-colonel or major (medical department) each part being under the immediate command of a major or captain (medical department).

41 Stationary hospitals may be established under canvas or in convenient buildings, and do not differ in all their requirements from civil hospitals except in the temporary nature of their installation and equipment. A train of surgical, subsistence and baggage wagons, is assigned to each according to its importance.

The first one should be as near the line of field hospitals as conditions permit, but far enough to be entirely removed from the scene of conflict. It should also be, if practicable, near a railroad, navigable river or the seashore so that invalided patients may at once be sent to a general hospital. In this first stationary hospital a careful examination and segregation of patients are necessary, those whose wounds are healing by first intention, and likely to be fit for duty within a short time, should be kept until returned to duty. Only those seriously disabled and unlikely to recover within a week or two should be evacuated towards the base.

This hospital should have an isolated annex for the treatment of all cases of contagious diseases sent from the front, such cases must be treated in situ, as near the field as possible, so as to avoid the exposure of troops on lines of communication.

If the campaign is closed, or at least if the active movements of the troops are suspended, field hospitals can be immobilized and transformed into stationary hospitals.

42 If the nearest point at which patients can be shipped by boat or rail to their homes or a general hospital is a long distance away it will be necessary to establish hospital stations along the road, every 15 or 20 miles, where patients can receive every necessary care, and those unable to proceed farther can be kept. In a friendly country, civil hospitals may be used for the purpose.

The base hospital is at the point where patients are placed on board ship or trains. It cares for patients until they are able to journey on, or while a waiting transportation.

43 The work of evacuation from the field hospitals to the base requires chiefly a large number of vehicles, ambulances should be used if available, that is, if not needed by the advancing troops in front, but even if used they will not be adequate to the demand after a hard contested battle, especially if the way to the base is long and over difficult country. Besides calling for all the available vehicles of the stationary and base hospitals and of the supply depot, the medical officer in command of the service of the rear will request from the proper authorities that the wagon trains constantly returning to the base for ammunition stores, &c., be made to report to the medical officer in charge of the evacuation at some designated place, so that each wagon may receive a load of patients. One hospital corps man should accompany every two or three wagons. Each wagon will carry two recumbent patients lying on their litters but if litters cannot be spared it should be outfitted with such improvised appliances as will insure the greatest measure of comfort and safety to the sick and wounded.

If military ambulances and wagons are not sufficient, the wagons, carts and light spring vehicles of the country can be requisitioned and utilized.

When the great labour of procuring and transporting large numbers of animals is considered, and the added difficulty of feeding them near the theatre of war, it is almost certain that, in future, some form of automobile will play a very important role in the removal of the wounded from the field hospitals.

* Under Art. I of the Geneva Convention, as construed by Art. III of the Additional Articles, first aid stations, ambulance stations and field hospitals "shall be protected and respected by belligerents so long as any sick or wounded may be therein."

At the base, all patients who are in condition to proceed further should be at once carried to the hospital train or hospital boat, as the case may be, those who need rest or immediate treatment are admitted to the base hospital.

44 The work of forwarding medical supplies will be effected by means of a general dépôt at the base, kept constantly replenished by requisitions upon the contractors, and of advanced sub dépôts reaching the first stationary hospital and, if possible, the line of field hospitals. To replenish these sub dépôts, the dépôt officer should have under his control an independent train of three or four wagons (more or less according to needs), kept constantly moving forth and back between the base and the front and bringing to the base its share of patients. In the absence of such a train, it will be necessary to rely upon the quartermaster's department for any transportation it can spare, or else upon the wagons of the stationary and base hospitals.

FOREIGN SERVICE.

45 In the organization of an army corps for foreign service beyond the sea, it is absolutely necessary that the Medical Department, for the efficient discharge of its duties, should have its own independent ships and the full control of its material and personnel. These ships will be of two classes: hospital ships proper, chiefly intended for the admission and treatment of patients, and hospital train ships for the transport of ambulances, wagons, litters, tractors, horses, mules, &c., both classes being fitted out so as best to subserve their purposes, but both carrying reserves of dressings, medicines and hospital stores. They should be provided with all necessary facilities for prompt loading and unloading, including lighters and steam launches, for, as was learned at Santiago in 1898, material in holds of ships is of no value to any one until it is landed.

Each transport should also carry the stores, dressings and medicines needful for the troops on board during the trip, and for about a month afterward, so that in case of accident to the hospital ships the troops may not be left unprotected. It should likewise have a place set apart for dispensary and ward, and another isolated room for infectious diseases. All cases of infectious diseases, as well as others not likely to recover before landing, should be transferred to the hospital ship if within call. If there be no hospital ship available, the transports shall make more adequate provisions for the treatment and isolation of the sick.

46 A base hospital and supply dépôt must be established at or near the landing place. As the troops advance into the interior, well guarded hospital stations will be set up along the lines of communication.

An important distinction must be made between a civilized enemy, observing the letter and spirit of the Geneva Convention, and an uncivilized enemy not respecting the natural and conventional rights of the wounded and their attendants, with the latter, every precaution has to be taken to prevent the wounded from falling into its hands, and the members of the Hospital Corps should be armed.

47 One of the most important duties of medical officers on foreign service is the clinical study of the diseases most prevalent in, or special to, the country in which they serve, since the troops will suffer more or less from these same diseases.

Our recent knowledge of the transmission of malarial fever, yellow fever, filariasis and elephantiasis by mosquitos, robs these diseases of their former gravity and renders them almost entirely preventable.

Very important also is the study of the native means of transportation so that, in case of need, they may be utilized to carry the wounded.

American troops on foreign service soon begin to suffer from nostalgia, often in a rather acute form, incapacitating many men for the proper discharge of their duties, the Medical Department can only advise the remedy, to keep the men moderately busy, vary their duties and above all, to give them the certitude that they shall not remain away from home more than two years—*(From Journal of Assoc. of Military Surgeons, U. S. Army)*

Current Literature.

A PRELIMINARY NOTE ON THE SERUM-THERAPY OF SNAKE-BITE

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The following is reprinted from the *Australasian Medical Gazette* of April 21st, 1902

By the courteous permission of the President of the Board of Health, I am enabled to publish the present preliminary note in anticipation of an official report dealing with the general subject of snake bite in this State.

In February, 1894, Phisalix and Bertrand, and A. Calmette announced almost simultaneously that animals could be rendered immune to snake venom, and that the blood serum of such animals was possessed of curative properties. These statements were confirmed by the investigations of T. Frazer, an account of which was published in the following year. Some observations on the same subject were made by Sewell and A. A. Kanthack, but its more recent development is mainly due to the researches of Calmette. This able observer has carried his labours to the point of elaborating and placing upon the market the product now well known as "Serum Antivenimeux 'anglicé' 'antivenime'."

Although this serum is prepared by treating horses chiefly with cobra venom, smaller quantities of other venoms are additionally used, and Calmette claims that the serum obtained is active against the venoms of all species of snakes. It is specifically stated to have been tested against the poisons of the cobra and trimeresurus of Asia, the naja haje and cerastes of Africa, the crotalus of America, the bothrops of the West Indies, the viper of Europe, and the pseudechis (black snake) and hoplocephalus (tiger snake) of Australia.

Partly from a knowledge of differences in chemical composition and physiological action between the venoms of different species of snakes, and partly as the result of practical experience, this sweeping assertion of the all round efficacy of the serum has not received acceptance. As regards Indian serpents, Lamb has found that whilst the serum is capable of neutralising the effects of cobra venom, it possesses no potency against daboia venom. Observations made in this country have also failed to support Calmette's contention. In some unpublished experiments made in this laboratory in October 1896, the serum proved unable to preserve the animals against tiger snake venom, and similar negative results were reported by C. J. Martin in August, 1897, this observer then expressing the opinion "That Calmette's conclusions regarding the value of the serum of an animal immunised against cobra venom as a protection against other venoms are, as they stand, untrue, and require considerable modification." Subsequent experiments performed in this laboratory have, unfortunately, only confirmed the view that Calmette's claim cannot be admitted as regards Australian snake venoms.

There is no need in this place to enter more deeply into the explanation of this lack of success than to point out that curative serums are essentially specific, acting, as a rule, only or only effectively against the toxins with which they have been prepared, and that, amongst other things, there are differences between the effects of cobra venom and tiger snake venom, such as might serve to explain why a remedy, applicable to one, proves ineffective against the other. As already stated, the venom used by Calmette for the preparation of the serum is chiefly cobra venom. But other venoms are mixed with it, and by consequence, the serum is not strictly adapted for the settlement of this question of specificity. It is necessary for this purpose to possess a serum prepared with one single kind of venom, and to test its efficacy against the same and other kinds of venom. Researches with this object have been carried on in this laboratory during the past three or four years, and have now resulted in the immunisation of a horse, and the acquisition of a serum fulfilling the conditions just mentioned.

The venom selected for the immunisation of the horse was that of the tiger snake (*notechis scutata vel hoplocephalus curtus*), this choice being determined by the consideration that should an effective serum be obtained it would be serviceable in the treatment of

the bites of the most dangerous of our snakes. The venom was taken directly from living snakes kept in the laboratory, the reptiles being made to bite and eject their venom into a watch glass covered with thin rubber sheeting which the poison fangs alone penetrate. By this means the venom is obtained free from saliva and from any adventitious products which might be squeezed or dissolved out of excised glands. The pure venom was thoroughly dried over calcium in desiccators and preserved in phials for use as required. Venom, so prepared has been obtained from the black, brown, and tiger snakes, and from the death adder. For injection the venom was dissolved in 9 per cent saline solution.

The horse subjected to the immunisation was a sturdy, well nourished creature, incapacitated from ambulance service only by reason of a sprained shoulder, which induced lameness on continued work. Throughout the treatment this animal has remained fat and sleek his general excellent health being only temporarily disturbed for brief periods after the injections of venom.

The treatment was commenced on June 7th, 1898, by the subcutaneous injection of 0005 gramme of the venom. This was repeated in a week and a week later the dose was increased to 00075 gramme. Increments of 00025 at each dose were maintained during the first six months of the treatment, but after that they were raised more rapidly, *eg*, by 0005 (January 1899) 01 (March 1899), 05 (May 1899) and 10 (January, 1901) gramme. The increments were pretty regularly given, the same dose being repeated only on rare occasions when the reaction was more than usually pronounced. Between October, 1899, and May 1900 the pressure of other work interfered with regular treatment, but otherwise the horse was injected once a week (June, 1898, to April, 1899), once a fortnight (May, 1899, to May, 1900), and once a month (July 1900, to January, 1902). The lengthening of the intervals was due to the difficulty of collecting the larger amounts of venom required as the dose increased. This same difficulty has limited the maximum dosage to 6 gramme, which was reached in April, 1901, and which it has not been possible to more than approximately maintain to date. During the period of 3½ years covered by the treatment the horse has received a total quantity of about 10 grammes of pure tiger snake venom. It may, perhaps, be pointed out that the dose which the horse now bears without effect (6 gramme) is about equal to the aggregate yield of 21 or 22 average snakes, and that total amount received by the horse during the treatment (10 grammes) is about equal to the amount which would be yielded by 333 average snakes.

The serum used in the experiments about to be described was obtained at two bleedings performed on May 5th, 1901, and October 9th 1901. The horse was bled in the usual way from the jugular vein by means of a trocar and cannula. The subsequent manipulations up to the distribution of the serum into small sealed tubes are fully described in the general report but need not detain us here. Suffice it to say, therefore, that from first to last the serum is entirely preserved from any risk of contamination, and is finally obtained perfectly pure and perfectly sterile, and without added antiseptic of any kind.

The efficacy of the serum was tested in the usual way by determining the amount required to neutralise the effect of a known amount of venom upon test animals. The experiments were performed by injecting mixtures of venom and serum into rabbits. In order to prevent the misleading inferences which might result from partial neutralisation, the amount of venom given was ten times the quantity required to kill the rabbits. As the result of a long series of observations, which indeed, have not yet been carried to finality, it was found that the following quantities represent approximately the smallest doses which on subcutaneous

injection could be relied upon to certainly cause the death of the rabbits —

Tiger snake venom,	00005	gramme	per	kilo	of	rabbit.
Brown snake	"	0002	"	"	"	"
Death adder	"	0002	"	"	"	"
Black snake	"	0006	"	"	"	"

These amounts are, the refore, what may be called the minimal lethal doses of the venoms. The tests were made with ten times the above mentioned quantities to which were added different amounts of serum, and the solution injected immediately after mixture to avoid any chemical changes that might occur after long contact.

In the first series the mixtures were injected subcutaneously, and the results obtained with the four different kinds of venom tested are briefly expressed in the following tabular statement —

Kind of Venom	No	Per kilo body weight		Result
		Venom in grammes	Serum in cubic centimetres	
Tiger Snake Venom	1	0005	005	Died
	2	"	01	"
	3	"	05	"
	4	"	1	"
	5	"	2	"
	6	"	3	"
	7	"	4	Survived
	8	"	5	"
	9	"	10	"
	10	"	20	"
Black Snake Venom	1	006	4	Died
	2	"	10	"
	3	"	20	"
	4	"	40	"
Brown Snake Venom	1	002	4	Died
	2	"	40	"
Death Adder Venom	1	002	4	Died
	2	"	40	"

It will be seen from this table that 4cc of the serum per kilo body weight sufficed to protect against the tiger snake venom, whereas ten times this amount, *viz*, 4cc failed to protect against the other venoms tested. It is obvious therefore, that, although an effective serum has been obtained, its action is specific, being operative only against the particular kind of venom used in its production.

From the fact that 4cc of the serum proved effective against the tenfold lethal dose of 0005 gramme of the venom, it was to be inferred that 04cc would protect against the single lethal dose of 00005 gramme of the venom. The validity of this inference is demonstrated by the data contained in the following table, expressing the results of two confirmatory experiments in which were used the single lethal dose of venom, and equivalent quantity of serum —

No	Per kilo body weight		Result.
	Venom in grammes	Serum in cubic centimetres	
1	00005	04	Survived
2	"	"	"

It is therefore concluded that 0.4cc of the serum is the quantity which will entirely neutralise the effect of 0.0005 gramme of tiger snake venom, the two being measured per kilo of rabbit, and injected subcutaneously immediately after their mixture in vitro

By a further series of experiments, it was ascertained that this same value for the serum held good when the mixtures were injected directly into the veins of rabbits. As a preliminary, it was necessary to determine the certain minimal lethal dose of venom for this method of administration. The series of experiments performed to this end gave 0.00005 gramme of tiger snake venom per kilo as the smallest that could be relied upon to cause death after intravenous injection into rabbits. As in the previous experiment, ten times this minimal lethal quantity was used as the standard dose of venom. It will be observed that the minimal lethal intravenous dose of the venom happens to be one tenth of the minimal lethal subcutaneous dose, consequently, in making the tests the serum pitted against it was correspondingly reduced. The following table shows the results obtained by injecting mixtures of 0.0005 gramme of tiger snake venom and 0.4cc of serum per kilo of the body weight into the jugular vein of rabbits —

No	Per kilo body weight		Result
	Venom in grammes	Serum in cubic centimetres	
1	0.0005	0.4	Survived
2	"	"	"

That these results apply also when single doses are used is shown by the results expressed in the following table —

No	Per kilo body weight.		Result
	Venom in grammes	Serum in cubic centimetres	
1	0.00005	0.04	Survived
2	"	"	"
3	"	"	"

It will be seen, therefore, that the serum is, at least, no less efficacious when the mixtures are injected intravenously than when they are injected subcutaneously. Taking the two series of results together, it becomes clear that as mixed and tested upon rabbits in the manner described, 0.4cc of the serum possesses the power of neutralising the effects of 0.0005 gramme of tiger snake venom, irrespective of the mode in which the mixture is administered.

By way of completion, attention may be called to corresponding experiments performed with Calmette's serum and tiger snake venom, the results of which are shown in the table below.

In these experiments every advantage is given to the serum by the use of only single lethal doses of the venom, nevertheless the results failed to indicate the possession of the power of even partial neutralisation, although the subcutaneous dose of Calmette's serum reached 100 times, and the intravenous dose reached 1000 times, the efficient quantity of the serum locally prepared by means of tiger snake venom.

Mode of Administration	No	Per kilo body weight		Result
		Venom in grammes	Serum in cubic centimetres	
Subcutaneous injection of single doses	1	0.0005	0.4	Died
	2	"	4	"
	3	"	40	"
Intravenous injection of single doses	1	0.00005	0.04	Died
	2	"	0.4	"
	3	"	4.0	"

From the series of observations just considered, it will be apparent that whilst the serum prepared in this laboratory with tiger snake venom possesses a high neutralising potency against this same venom, it utterly failed to exhibit appreciable protection against the venoms of the brown and black snakes and that of the death adder. To extend the series of observations, I have forwarded a quantity of the serum to Captain G. Lamb, of the Parel Laboratory, Bombay, who has kindly consented to test it against the venoms of Indian snakes. In the meantime, the outcome of the experiments already performed is such as to indicate that the serum is specific in its action operative only against the venom by means of which it was prepared. In view of this issue, it seems reasonable to suppose that the value of Calmette's serum against cobra venom, and its lack of efficacy against daboia and tiger snake venoms are to be explained on the grounds of specificity. However much in keeping with scientific theories and beliefs, this specificity is unfortunate from the point of view of practical serotherapy, since there is the prospect that we need a special serum for each kind of snake. Whether or not this complication can be overcome by immunisation with a judicious mixture of venoms must be left for the future to decide.

In conclusion it may be pointed out that the experimentally ascertained neutralising potency of the serum prepared in this laboratory by no means indicates the degree of its possible value for the treatment of tiger snake bite in practice. The establishment of this point is beset with difficulties, and the observations so far made with respect to it are too incomplete to permit of any valid inference. However, the work is in progress, and I hope to be in a position to make some further communication upon this subject in the course of a few months.

Correspondence.

THE FURLOUGH PAY OF MAJORS, I M S

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR — With reference to your notes on the Indian Medical Service, I write to bring to your notice the existing regulations as regards furlough pay of Junior Majors. Here is a case in point — A Junior Major I M S, is invalided home from the result of injury on field service, and because he is not over 15 years service, he only gets Captain's pay of rank yet has to pay all Major's subscriptions and receives none of the privileges of the Captain as regards indulgence, passages &c, so he really draws less pay than a Captain (as his military subscriptions are greater). The furlough pay isn't really much more than one third his bare regimental pay and I don't think a similar state of affairs exists in the whole of the army.

I venture to think that a few comments on this subject in your journal might rectify matters.

Yours, &c,
T C

LONDON

THE DOSE OF ANTITOXINS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—On a former occasion I had to deprecate in your columns the tendency to draw far reaching conclusions on inadequate grounds purporting to be based on experimental data. I take the opportunity offered by Major Carr White's interesting paper "Is Antivenene of any value in Cobra Poisoning," in your current number to again draw attention to this important matter in relation to the anti toxins taking for illustration anti venene, anti tetano toxin anti streptococcic serum and diphtheria anti toxin. I do so the more readily that my position as Medical Store keeper to Government, Punjab Command, has laid bare to me the fact that most extensive ignorance prevails on the correct dosage of these anti toxins, and consequently anything that may lead astray in their administration may create hopeless discouragement. Erroneous dosage can only result in disappointment and undeserved condemnation of four of the most hopeful remedies of modern times which appear to have proved entirely efficacious when properly administered, both in the laboratory and at the bed side. Once prejudices get established it will take long to convince against them or to correct ingrained opinions founded on ignorance.

Intention.—The instructions in Professor Calmette's former directions enclosed with each phial, lay down that "generally 10 cubic centimetres are sufficient for children under ten years of age and 20 c c for adults. However, when the bite comes from a very dangerous species, such as Cobra Capella, the Najabaje, the Crotalus, or the Bothrops of the West Indies, it will be prudent to make one single injection first of a double dose." Now each phial contains only 10 c c that is the minimum dose for a child under ten years bitten by a not very poisonous serpent, but as the snakes in India are practically all very venomous (including the Cobra di Capello and others of the genus Naja the Karat and others of the genus Bungarus, the Daboia Russoli, and the Echis Carinata), the ordinary adult dosage would consist of 40 c c, or four phials, with a reserve of another 20 c c or two phials. Thus the ordinary stock of any hospital should really be not under six phials for any one case. These instructions, however, have now been superseded by recent ones which have the disadvantage of being in French. These directions are "La dose à employer est de 10 c c. C'est à dire un plaçon entier, pour les enfants et pour les adultes, lorsqu'il s'agit d'une morsure de vipère d'Europe ou d'un serpent de petite espèce des pays chauds. Dans les cas de morsures par des serpents de grand taille, tels que le cobra capel * *, le naja haye * *, bothrops les ci tales * * il sera préférable d'injecter simultanément deux doses, soit 20 c c en une seule injection. Here it is recognised that the efficacy of the antidote does not depend upon the weight of the animal or age of the person, but upon the dose of the poison to be neutralised hence the same dose is recommended for children as for adults namely now, in the case of our dangerous snakes 20 c c. Presumably this modification of dose is due to increased strength of the antivenene now prepared. Anyhow the "double dose" for the more venomous snakes may be taken to be from 20 to 40 c c, that is two to four phials. With a reserve of another 20 c c for repetition, if necessary, the ordinary stock of a hospital should then be not under six phials, although four phials may meet ordinary requirements. In the face of this is it not a pity that some medical officers should for a moment dream that one single phial of 10 c c can possibly be of the slightest avail in saving life, and the more so since its efficacy wanes with every month of its keep in this hot climate? Major Carr White may now see why it is his experiments so far cannot be considered conclusive.

I have avoided the question of the division of antivenene into anti colubrine and anti viperine as this is yet under investigation. Although Captain Lamb, I.M.S., of the Research Laboratory, Bombay believes he has disproved the utility of antivenene against daboia venom (*Indian Medical Gazette*, April 1902, p. 145) Calmette himself distinctly claims that his serum is an antidote "against the venom of all species of snakes existing in the ancient and new world. My remarks were recorded in February, but I observe in your April issue Lamb emphasises the necessity for dosage in cobra bites up to five phials, or even a resort to intravenous injection of not less than 30 c c. Need I add more?

Anti tetano toxin.—This to prove at all efficacious as a therapeutic measure generally requires repeated administration—at least 10 to 20 cubic centimetres every six or twelve hours according to urgency of symptoms and the duration of the incubation period, that is an average of say, 80 c c, or eight doses ranging over four days in any single adult case. Calmette, in his directions says, "La quantité de sérum à injecter pourra varier entre 50 et 100 centimètres cubes en une ou deux doses," and recommends 10 c c only as a prophylactic. Now, as each phial contains only 10 c c, it will take ten phials to combat one single case only, for we must provide a maximum dose so as to be ready for all emergencies. Of course this serum also loses strength with age.

Anti streptococcic Serum.—Dr Hewlett Bacteriologist to the British Institute of Preventive Medicine London (in Squire's Companion to the British Pharmacopœia, 1899, Ed.) states the dose to be 10 to 20 c c every six, twelve, or twenty four hours, and that some continental authorities regard this amount as much too

small and administer 50 to 150 c c for a dose. Calmette's directions give, I believe from 30 c c to 60 c c for one case, but I have not got the paper to quote accurately. But if we take 20 c c for a dose and repeat this every twelve hours for four days, we ought to have 160 c c, or 16 phials for the treatment of one case. And this anti toxin rapidly diminishes in strength and so requires increased dosage.

Diphtheria anti toxin.—The present supply of this in India is from Burroughs, Wellcome & Co. London, and each phial contains about 4.5 c c, which are stated to be equivalent to 2,000 units of immunity.

This is one dose for a mild case or at the onset. The directions accompanying the phial state that—"As many as 4000 units may with advantage be given at the first injection in severe cases." And further on—"The serum may be used freely. In cases which proceed unfavourably, the treatment may be repeated in about six hours." It is also recommended that protective injections be administered to the rest of the family wherein the attack occurs, i.e., one phial to each individual. From this it would be doubtful as to how many doses it would be wise to maintain for any single case, but the suggestion is four phials, with two in reserve for the case, and say, four others for prophylaxis—total ten doses or phials of 2000 units each.

Dr Hewlett (in Squire's Companion) quotes Washbourn (*Treatment*, 1898, i, 533) who recommends "2,000 to 4,000 units every eight or twelve hours for three days." Taking the larger dose for a severe case, the dosage required to be maintained in stock for one single case would be 24,000 units in twelve phials of 2,000 units each. Add to this four phials for prophylaxis, and the total requirements would be sixteen phials for combating a single case, or if we administer doses of only 300 c c for prophylaxis, one phial being used, at least thirteen phials would be required. The doctor therefore, who uses, say, a couple of phials on a serious case and then proclaims their failure is surely to be deeply commiserated.

I write therefore in the interests of correct dosage, and also remind medical men that all anti toxins diminish in strength by exposure not only to heat but to light. Of course these sera from Europe are very expensive and so deter extensive usage. But it is believed our Indian laboratories will soon supply us with all our requirements at a moderate cost.

I am, &c,

P. W. OGORMAN,

LAHORE,
12th November 1902

M.D., M.R.C.P., D.P.H. (CAMB.),
MAJOR, I.M.S.

A GOOD HAIR DYE.

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In reply to the letter appeared in your Gazette for July 1902, on page 292 I have to inform Mr A. of Punjab that the best hair dye is prepared and sold by one Anantapud manabhiya at Gorbindpur Kolar District, Mysore Province. He charges one rupee for a supply. I don't think he will give out the secret of preparing the same.

Yours, &c,

Y. N.

Service Notes

WITH reference to Army Order 39 of 1902, changes in the dress of officers, the Government of India have approved of the following changes being made in the dress of officers of the Indian Medical Service—

Surgeon General

1 Uniform as laid down for the Army Medical Service, with the following exceptions—

- (a) I.M.S. buttons
- (b) Royal and Imperial cypher on pouch
- (c) Present pattern mess jacket to be retained
- (d) An alternative plain open white washing waistcoat with out lappels and fastened by four small gilt buttons of departmental pattern

All Officers

2 Trousers and pantaloons—Gold lace stripes on trousers are abolished. The red striped trousers and pantaloons will be retained.

3 Spurs—Brass spurs are abolished—steel spurs only will be retained.

4 Buttons—All buttons will be die struck not mounted, except those worn on mess waistcoats.

5 Tunes—Ranks below that of substantive Colonel will not be denoted in future by ornamentation on the sleeves and collars of tunics. The collars and sleeves will be trimmed as now directed.

for Lieutenants. The only change, therefore, to be made in tunics on promotion, from one rank to another, will be the alteration of badges of rank. Tunics at present in use may be continued in wear without alteration, until worn out. New tunics purchased after the date of this order will be laced as above.

There will be no alteration to the skirts of tunics.

6 *Gloves*—Brown leather gloves will be worn on all parades, white kid at levees and balls.

7 *Mess Dress*—No change will be made in the present patterns. An alternative plain open white waisting waistcoat without lappels and fastened by four small gilt buttons of departmental pattern may be worn at option.

8 *Field Caps*—The present pattern field cap will be retained.

9 *Forage Caps*—The present pattern is abolished, and the new Staff (or Naval) pattern cap with black velvet band will be adopted.

Badges as at present worn on field cap.

10 *Frockcoat*—The new universal pattern of frockcoat described in paragraph 27 of the details accompanying Army Order 39 of 1902, will be adopted only by officers employed at Government, Army, Command or District Head Quarters, or on the Personal Staff of H. E. the Commander in Chief, or Governors, so as to conform to the order of dress "Staff in blue."

11 *Patrol Jacket*—The patrol jacket is abolished.

12 The remainder of the uniform will remain as at present.

13 *Senior Assistant Surgeons*—As for other officers of their respective honorary rank.

14 *Period of wear for obsolete articles*—Period during which obsolete articles may be continued in wear by officers in possession of them prior to the date of this order.

Gold lace stripes on trousers Abolished forthwith

Brass spurs Do Do

Forage cap 1st January 1906

Patrol jackets Do

CAPTAIN H RINSWORTH, I M S, having gone on plague duty at Lahore, Captain D. R. Battye, I M S, 19th Punjab Infantry, acted as Civil Surgeon of Mooltan.

The following Medical Officers in civil employ, Bengal, are expected back from leave on the following dates—

Major H. Pilgrim, I M S, on 27th January 1903

Major T. H. Tull Walsb, I M S, on 30th January 1903

Lieutenant-Colonel F. French Mullen, I M S, on 29th July 1903

Dr C. Banks, on 15th October 1903

Lieutenant-Colonel D. G. Crawford, I M S, on 8th November 1903

Major C. E. Sunder, I M S, on 12th February 1904

Captain F. O. Kinealy, I M S, on 20th February 1904

Major E. H. Brown, I M S, on 31st March 1904

Major H. J. Dyson, I M S, on 30th June 1904

MILITARY ASSISTANT SURGEON C. R. W. BANCROFT is appointed for the cold season as Travelling Inspector of Emigrants, Assam.

MAJOR E. JENNINGS, I M S, Superintendent, Central Jail, Bareilly, has taken out a patent for a new oven for cooking chapatties.

OFFICERS commanding units are authorised to advance one month's pay to public army followers, who are sent for treatment to the Kasauli Pasteur Institute.

An American Consul in China reports that "fish-eating people" are the first and most severely to be attacked with plague.

LIEUTENANT COLONEL A. J. O'HARA, I M S, has been permitted to retire from the service from 2nd November 1902. He entered the service in April 1881, and has been on sick leave since 20th April 1901.

He had been for many years in civil employ in Madras.

The services of Captain J. Stevenson, M B, I M S, are placed permanently at the disposal of Punjab, and those of Captain J. Penny, I M S, permanently at the disposal of the Burma Government.

MAJOR P. CARR WHITE, I M S, is granted 1 year's combined leave.

On return from furlough Lieutenant-Colonel P. Durell Pank, I M S, resumes the post of Residency Surgeon at Jeypore, and Major Robinson, I M S, returns to Bikanir.

On the return of Lieutenant-Colonel Gimlette, I M S, from furlough, he goes back to Hyderabad (Deccan), and Major Drake Brockman is posted as Agency Surgeon, East Rajputana.

LIEUTENANT COLONEL C. J. BAMBER, I M S, returned from furlough on 7th October, and relieved Captain E. Wilkison, I M S, F R C S, of the post of Sanitary Commissioner, Punjab.

LIEUTENANT COLONEL J. A. Cunningham, M D, I M S, has returned from leave, and to his appointment as Civil Surgeon of Lahore, Professor of Midwifery, and of Forensic Medicine in the Medical College, relieving Captain C. H. James, I M S, who has been appointed Inspecting Plague Medical Officer in the Punjab.

On return from leave Lieutenant Colonel H. K. McKay, I M S, C I E, went back to Jubbulpore as Civil Surgeon, and Captain P. F. Chapman, I M S, was transferred to Seoni, as Major W. L. Price, I M S, the Civil Surgeon, has got furlough (m c) for 1 year 9 months and 21 days.

LIEUTENANT COLONEL W. R. BROWNE, M D, I M S, acts as P. M. O., Madras District, vice Colonel W. E. Johnson, M D, I M S, granted leave out of India.

LIEUTENANT COLONEL H. R. WHITEHEAD, F R C S, R A M C, has been directed to proceed to England for duty.

LIEUTENANT COLONEL L. A. WADDELL, C I E, I M S, is appointed *sub pro tem*, P. M. O. of the Malakhand force.

CAPTAIN H. J. R. TWIGG, M B, I M S, having joined the Bombay Jail Department, is posted as Superintendent, Central Prison, Hyderabad (Sind).

MAJOR ANDREW BUCHANAN, I M S, is appointed to be Civil Surgeon of Wardha, but continues to act as Civil Surgeon, Nimar.

CAPTAIN F. O. N. MELL, I M S, is appointed Superintendent of the Nagpur Central Jail.

On relief by Captain Mell, Honorary Captain J. Prentiss, I S M D, reverts to his appointment as Civil Medical Officer and is posted to Bhandara District.

CAPTAIN P. K. CHITALE, I M S, officiates as Civil Surgeon, Betul, and Honorary Lieutenant M. Windross reverts to his appointment as assistant to the Civil Surgeon, Jubbulpore.

CAPTAIN T. W. IRVINE, I M S, is appointed to be Medical Officer of the Seistan Mission.

MAJOR M. A. T. COLLIE, I M S, M B, has been permitted to return to India within the period of his leave, and is appointed Presidency Surgeon, Third District, Bombay.

MAJOR C. H. L. MEYER, M D, B S, I M S, is granted combined leave for 11 months and 28 days from 15th November 1902, Captain E. F. G. Tucker, I M S, acting for him as Second Physician of the J. J. Hospital, and Professor of Pathology in the Grant Medical College.

MAJOR J. G. HOJEL, M B, B C H, I M S, is granted combined leave for 18 months from 25th November.

LIEUTENANT COLONEL W. H. BURKE, I M S, has been allowed to return from leave within the period of his leave.

CAPTAIN F. H. WATLING, I M S, is granted three months privilege leave from 6th November, and Captain C. R. Stevens, F R C S, I M S, Civil Surgeon, acts as Superintendent, Central Jail, Midnapur, in addition to his other duties.

CAPTAIN J. M. WOOLLEY, I M S, has joined the Bengal Jail Department, and is posted to Bhagalpore as Superintendent of the Central Jail there.

MAJOR A. W. D. LEAHY, I M S, F R C S, has been granted six months' extension of leave on medical certificate.

The services of Captain W. E. A. Armstrong, I M S, recently Officiating Surgeon to the Viceroy, are replaced at the disposal of the Foreign Department.

COLONEL G. MCB DAVID, M D, C B D S O, I M S, was permitted to retire from 25th October 1902. We have already referred to Colonel Davis' services.

CAPTAIN C H S LINCOLN I M S, acted as Deputy Sanitary Commissioner W R District, Bombay, during the absence of Lieutenant Colonel A V Anderson, I M S

CAPTAIN T HUYTER I M S, on being relieved of his appointment as Officiating Superintendent, Central Prison, Allahabad, goes to Farrukhabad as Civil Surgeon

LIEUTENANT R STEEN, I M S, holds additional medical charge of Almora

WE are glad to see that Lieutenant Colonel J Maitland, I M S, is appointed Principal Medical Officer Madras General Hospital, *vice* Lieutenant-Colonel W R Browne, I M S, whose services were placed at the disposal of the Government of India for employment as P M O, Madras District

LIEUTENANT COLONEL W B BROWNING O I E, I M S, Professor of Medical Jurisprudence Madras, and Surgeon, 4th District, is appointed 1st Surgeon to the General Hospital

CAPTAIN C H L PALK, I M S, is appointed Surgeon, 4th District, Madras

CAPTAIN C F FEARNSIDE I M S, on return from furlough, is appointed Superintendent of Prisons, Madras.

"*Intra mercurial injections* ' (*sic*) are evidently much in vogue in the army as they are possibly mentioned in the corrections to para 1596, I A.R., Vol VI. Possibly the Military Authorities mean intramuscular injections of mercury'

LIEUTENANT COLONEL VANDI, I M S, is made Medical Officer 8th Rajputs, *vice* Major G B French, I M S

CAPTAIN J A HAMILTON, I M S, has got one year's leave

THE leave granted to Major J B Basu, I M S, is extended for four months on medical certificate

THE order transferring Captain H A Smith I M S from Rai Bareilly to Banda was cancelled in *U P Gazette* of 15th November 1902.

MESSRS HOLMES AND CO, of Derby, Lichfield London, and other places, coachmakers to the King have been officially informed that the committee appointed to conduct a test of ambulance waggons submitted in competition for prizes offered by the Secretary of State for War, have adjudged the waggon submitted by them to be deserving of the first prize of £500. About a dozen firms entered in the competitions and the trials took place at Aldershot over specially selected ground

ACCORDING to the specifications of their waggon, which Messrs Holmes supplied at the time, it will carry four patients lying down or twelve sitting with two hospital orderlies and one driver. The body is constructed to carry four stretchers (service pattern), two on the bottom of the waggon and two on the seats, with a passage down the centre with ample room for an attendant to pass between them, and so arranged that the men are able to sit up on the stretchers. The stretchers rest on India rubber cushions, or can be suspended at the head by straps with insulators. When the stretchers are not in use the hind seats are turned down and the four raised backs are turned up, the stretchers are packed two on the sides under seats, and two behind the raised back irons, it not being necessary to remove the cushions, so that the exchange can be made with as little delay as possible. Any two of the stretchers could be used and room would be left for six men to sit on the seats. There are two cupboards, with locks, in the body of the waggon for medical comforts etc and a lamp to burn oil or candle, which is also in interchangeable with those outside. Six rifles can be carried, two under the seats and four at the front end of the body. A movable water tank of aluminium, to hold ten gallons, is fixed under the body, and two cupboards accessible from the outside, at the back of the waggon. The roof is supported by six weldless steel tubes nickel plated, and is boarded on the top and provided with a luggage rail so that it may be used for a light and bulky top load. The four side curtains are of a strong waterproof material, and can be either opened by sliding on iron rods or reefed as required independently. When the waggon is required for rail transit the roof can be lowered. Patent springs are employed, which will have the effect of reducing oscillation. The

wheels are of service pattern, but are hooped with a special design of Indiarubber tyre, secured in a dovetail section of steel and wired on. A cross spring is provided to relieve the side springs when fully loaded. A powerful screw brake on both hind wheels and suitable ventilators are among the other details of this new vehicle

COLONEL C H JOUBERT, F R C S I M S, is confirmed as Inspector General, Civil Hospitals in the United Provinces, from 1st October 1902

ON the retirement of Colonel Joshua Duke, I M S, Major W R Edwards, O M G, I M S, is appointed Residency Surgeon Kashmir, and Captain J N Macleod is posted as Agency Surgeon, Quetta

THE King has approved of the retirements of the following officers, Lieutenant-Colonel B Doyle I M S from 30th July 1902, Major T C Moore I M S, from 23rd May 1902, and Lieutenant-Colonel J K. Kangra, I M S, from 18th December 1901

CAPTAIN G BIDIE, I M S, is appointed Medical Officer, 2nd Infantry, H C, Captain R W Knox, I M S Medical Officer 4th Infantry, H C, and Lieutenant P L O'Neill, I M S officiates as Medical Officer, 2nd Infantry, H C *vice* Captain Bidie, temporarily transferred to the Civil Department

CAPTAIN D H ANDERSON, I M S, is appointed to the officiating medical charge of 5th Infantry H C, *vice* Captain H R. Brown, I M S, who reverted to the Madras Command

IT is satisfactory to learn that if a medical officer wishes to order a sick soldier lemonade he is allowed to "render it sparkling by the addition, if necessary of soda water," but the drink must not be the lemonade of commerce, but must be made from limes or limejuice. See para 304 A of that wonderful Vol VI, I A. R.

COLONEL H HAMILTON I M S, is appointed P M O, Lahore District, and Lieutenant Colonel B O'Brien, I M S recently Civil Surgeon of Allahabad, becomes P M O, Presidency District, Calcutta.

CAPTAIN F S NOVIS, I M S, has been granted one year's leave out of India.

MAJOR D S P RICKETTS, I M S, has gone in charge of No 65 Native Field Hospital in Somaliland

LIEUTENANT J SCOTT, M B, I M S, is appointed to the 1st Madras Lancers

CAPTAIN A W TUKE, I M S, is appointed to medical charge 19th Bombay Infantry, *vice* Captain Hooton, gone to civil employ

THE Secretary of State has permitted Captain R. H. Elliot M D, F R C S, I M S to work on snake venom for six months in Professor Fraser's Laboratory at Edinburgh

LIEUTENANT COLONEL E. DOBSON I M S, continues to act as Medical Store keeper to Government, Bengal, and Lieutenant-Colonel D P Macdonald, I M S, on return from furlough, has gone to Mian Mir for the present.

LIEUTENANT COLONEL WADDELL, C I F, I M S, will act as Secretary to the P M O at the Delhi Manœuvres

LIEUTENANT E C HEPPER, I M S, is granted six months' leave on medical certificate

LIEUTENANT W A. JUSTICE, I M S, was placed in temporary medical charge of 2nd Madras Lancers, relieving Captain A. E. Bury, I M S

CAPTAIN E C MACLEOD, I M S, Civil Surgeon, Assam, has been granted ten months extension of furlough

CAPTAIN W L PRICE, I M S, has gone on one year's combined leave

The subject for the Eno Sanders' Prize Essay for 1902-3 will be 'The Differential Diagnosis of Typhoid Fever in its earliest stages,' an important and practical subject.

THE following remarks are quoted from a paper by Captain J S Kulp of the Medical Department, U S Army (*Journal of A U S of U S Army*, September 1902) We may remember Treves' dictum about "the plague of flies and the plague of women," an opinion with which it is clear from the article we quote is not unshared by Medical Officers of the U S Army —

"The hospital corps private is far from perfect, but for his defects, especially in subsequent enlistments, his officers are not without blame. He drinks, his amusements are not refined, his home influences have not been of the best, his language is not always grammatical and as frequently profane, while his contributions to the government, through military channels, are of generous proportions. But his loves are of his life a thing a part, he is seldom upon the sick report except for cause, and if his detachment commander gives him half the training his brother of the line receives, and does not go too wide of the Golden Rule, he will not be found wanting in time of trial. The female nurse cannot be used in military hospitals without having her labor supplemented by that of the sanitary soldier, her services cannot be utilized at all in battle, on the march, or even on the tented field, but in large base hospitals she will always be an important factor and in sudden emergencies female nurses can always be obtained in adequate numbers, when time does not permit men to receive the training, without which they are useless. The intelligent, upright and well instructed sanitary soldier is becoming more and more in evidence, and upon this trained nurse of the hospital corps—useful wherever the exigencies of war may call him—depends at the last the comfort and the safety of the wounded soldier."

We learn that in the Medical Service of the Swedish Army every Infantry Regiment of 3 battalions and in the larger Cavalry Regiments there will be three Medical Officers—a Captain and two Lieutenants, in the smaller Cavalry Regiments and in all Artillery Regiments there will be two Medical Officers—a Captain and a Lieutenant. The total strength of Medical Officers has been raised to 204, and the pay has been materially increased, a Lieutenant-Colonel will receive 1,876 dollars (American Currency), a Major and senior Captain 1,608 dollars, a junior Captain 1,072 dollars, a Lieutenant 804 dollars a year (*J of M S U S A*)

COLONEL A F DOBSON, I M S, P M O, Burma, has gone on eight months' leave

COLONEL W E Johnson, I M S, has gone on eight months' leave *p a* from 1st November 1902

LIEUTENANT COLONEL H F L P F ESMOND-WHITE, I M S, was due to return from leave on 21st December 1902

ON return from furlough Major H R. Woolbert, I M S, F R C S, is posted as Civil Surgeon to Ajmere

MAJOR R C MACWATT, I M S, is posted as Agency Surgeon in Harauti and Tonk

LIEUTENANT COLONEL J P BARRY, I M S, is appointed Civil Surgeon, Thana, and Superintendent of the Lunatic Asylum, Nagpada

LIEUTENANT COLONEL MISTRI, I M S, is appointed Civil Surgeon of Broach

LIEUTENANT R STEEN, I M S, is appointed to the medical charge of 5th Bengal Light Infantry

A BOOK for I M S officers to get and read is *Physician and Friend*, being the letters of Dr Alexander Grant, I M S, to the great pro consul Lord Dalhousie, who, it is well known, did more for the Medical Department than any Viceroy who has ever been in India.

LIEUTENANT COLONEL R H WHITWELL, I M S, is appointed to officiate as Civil Surgeon of Patna.

THE special leave of four months and twelve day taken by Major A. Leahy, I M S, F R C S has been commuted by the Secretary of State into furlough on medical certificate and extended for six months

CAPTAIN S EVANS, I M S, Assistant Civil Surgeon, Poona is also appointed Consulting Officer of Health to Poona city

DR J W O VAN WILLINGE is appointed medical officer, General Plague Hospital, Poona

We learn that the question of the establishment of a Sanatorium at Ranikhet for the open air treatment of military officers and men suffering from tuberculosis has now been considerably advanced. Surgeon General Sir Thomas Gallwey, K C M G, has submitted his proposals to the Government of India, and the Military Works Department have been directed to submit plans and estimates for buildings for the same

A correspondent sends us the following note —

Furto pcy of R. A M C and I M S (in Military employ)

Rank	Official pay per annum		Actual pay received after deductions	
	£ s d	£ s d	* £ s d	*† £ s d
	<i>R A M C</i>	<i>I M S</i>	<i>R A M C</i>	<i>I M S</i>
Captain over 10 years	383 5 0	300 0 0	374 18 8	278 9 0
Major under 15 years	428 17 6	300 0 0	411 15 6	277 18 0

Note — (A) A senior Major of the I M S draws pay at the rate of £1-1-11 a day or 11d a day more than a Captain of the R A M C, but the 1d a day is nearly absorbed in his Military subscriptions

(B) Compare actual pay received by Major, I M S, in above table with that of Captain I M S and Captain R A M C, when it will be seen that the senior officer draws actually less pay than either of his juniors and almost £100 a year less than the R A M C Captain

(C) The I M S officer from sick leave had to pay his passage out to India out of this and R A M C officer gets a free passage

COLONEL H HAMILTON, I M S, was appointed P W O, Lahore, vice Colonel Geoffrey Hall, F R C S, retired, and Colonel B O'Brien, I M S, became P M O, Presidency District, vice Colonel McBride Davis, C B, D S O, I M S, retired

Colonel Hamilton thus become Colonel permanently in 26½ years' service, a record, we fancy in the service, Col O'Brien had put in 30 years service on 1st October 1902

CAPTAIN G P I GROUBE, I M S, was placed on plague duty at Bangalore

MAJOR E WICKHAM HORE, I M S, is posted as Agency Surgeon, Baghelkhand, and Captain de Vere Condon, M B, I M S, as Residency Surgeon, Persian Gulf

CAPTAIN J LLOYD T JONES, I M S, returned to duty as Deputy Assay Master, Bombay Mint on 20th November, and Captain J J Bourke, I M S, is granted six months combined leave

CAPTAIN C J ROBERTSON MILNE, I M S, M B, is placed on special duty at the Kassauli Pasteur Institute for the study of cerebro spinal fever

LIEUTENANT COLONEL J W RODGERS, I M S, resumed civil medical charge of Kohat District on 11th November 1902, relieving Captain H M Cruddas, I M S

CAPTAIN A W TUKE, I M S, has been appointed Residency Surgeon, Baroda, in addition to his other duties

ON return from leave Captain T W A Fullerton, I M S, is appointed a Civil Surgeon, 2nd class, and posted to Allahabad

* After deducting Income Tax and in the case of I M S

† Deduct also (for unmarried officers), Indian Military Fund Mess Subscription and Band Subscription

‡ Major's subscriptions are heavier than Captain's

CAPTAIN P K CHITALF was appointed special Medical Officer under Epidemic Diseases Act of 1897 at Burhanpur in Nimar District.

CAPTAINS S B SMITH I M S, P B Haig I M S, R G Turner, I M S, S A. Harriss, I M S and W E Scott-Moncrieff I M S, were placed at the disposal of the Punjab Government in September last for plague duty

LIEUTENANT COLONEL H ALLISON M D, I M S, is granted the temporary rank of Colonel from 25th November while P M O, Burma district, *vice* Colonel A F Dobson, on leave

LIEUTENANT J G S SWAN, I M S, is appointed Medical Officer Lawrence Military Asylum, Sanawar, *vice* Lieutenant-Colonel Sedgfield, I M S, deceased

LIEUTENANT COLONEL A H C DANE, I M S, is promoted Colonel to date from 2nd November 1902

LIEUTENANT COLONEL M E REPORTER I M S 11th Coorg Infantry, is permitted to retire from 27th November 1902

COLONEL T H HENDLEY, I M S C I E., is one of the Judges at the Arts Exhibition at the Delhi Coronation Durbar

WE note that the mistake in date of the Commission of Lieutenant W A Justice, I M S, is now corrected and given as 29th January 1902, *not* 26th July 1902 as previously notified

WE hear that Major H Herbert I M S, F.R.C.S., of Bombay, is bringing out a book on *Cataract Extraction*

THE following retirements have been approved by the King — Surgeon General Lionel Dixon Spencer, M D, C B Dated 16th June 1902

Colonel George Hutcheson, M D Dated 1st October 1902

Lieutenant-Colonel Edward Vair Dated 3rd July 1902

Lieutenant-Colonel Dharma Das Basu Dated 7th July 1902

THE following Lieutenants, I M S, are gazetted Captains from 27th July 1902 —

E. D W Greig
Campbell Dykes
William Ernest McKechnie
William Frederic Harvey
William Charles Hughan Forster
John Johnson Urwin
David McCay
Arthur Brownfield Fry
Harry Diamond Peile
Douglas Henry Fawcett Cowin.
Edward Cecil Gordon Maddock
William Henry Dickinson
Walter Walter Manuk
William Hancock Tucker
Arthur William Tukey
Charles Stewart Lowson
John Sloan
George Herbert Stewart
Dugald Nairne Anderson
Nath Manmatha Chaudhuri.

DURING the absence on deputation to Delhi Durbar of Lieutenant-Colonel H K McKay, C I E., I M S, Captain G H Stewart, I M S, acted as Civil Surgeon of Jubbulpore

THE leave of Lieutenant-Colonel J Lewtas, M D, I M S, has been extended up to 19th September 1903.

LIEUTENANT COLONEL WHITWELL, I M S, on return from furlough has gone to Bankipore as Civil Surgeon of Patna.

LIEUTENANT COLONEL H ALLISON, M D, I M S, was appointed, on 25th November 1902, to act as P M O, Burma, *vice* Colonel A F Dobson, M B, I M S, granted leave

LIEUTENANT COLONEL J F MACLAREN, I M S, acts as Civil Surgeon, 1st class, *vice* Lieutenant-Colonel B O'Brien, I M S, promoted to Administrative rank.

MAJOR H W PILGRIM, I M S, Surgeon Superintendent of the Presidency General Hospital, has passed his examination for F R C S

ON return from leave Captain W D Hayward, I M S, was appointed Deputy Sanitary Commissioner, Northern Bengal Circle

THE services of Captain C J Robertson Milne are replaced at the disposal of the Government of India in the Home Department.

THE leave of Major J G Hojel, M B, I M S, is now gazetted as privilege leave for two months and ten days in combination with furlough for fifteen months and twenty days with effect from 21st November 1902

ON return from furlough Captain S A C Dallas, I M S, is posted to Chhindwara, C P

LIEUTENANT COLONEL H E DEANE, R A M C, who has been on special duty for several years past as Chief Plague Medical Officer in Calcutta, goes home on expiry of tour in January. Major Deane has acted for some years past as the popular and enterprising Honorary Secretary of the United Service Club, Calcutta and has taken a prominent share in organising the scheme for the new club buildings

THE services of Major P W O'Gorman, I M S, M D, D Ph, are replaced at the disposal of the Punjab Government.

IT is said that Lieutenant-Colonel D P Macdonald, I M S, may take leave early in the hot weather preparatory to retirement from the Service

IT is understood that Major Vaughan, I M S, M B Superintendent of the Campbell Medical School, Calcutta, will go on furlough early in April

THE retirement of Lieutenant-Colonel A W Mackenzie M B, I M S 47th Sikh Infantry, is gazetted from 31st January 1903. He entered the Service on 31st March 1877. He has remained chiefly in regimental employ, and has seen much service, from the Kabul to Kandahar march, and several frontier expeditions down to Waziristan in 1895

Notice

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The Practitioner's Guide (Longmans) Price 21s
The Census in India Report. 3 vols
Merck's Index
Pollitzer's Diseases of Ear New Edition (1902)
The Bengal Customs Report
The Bengal Police Report

COMMUNICATIONS, LETTERS, RECEIVED FROM —

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Original Articles

AN ANALYSIS OF ONE THOUSAND CONSECUTIVE CATARACT EXTRACTIONS

BY F P MAYNARD, M.B., F.R.C.S. (ENG.), D.P.H. (CAMB.)

Offg. Ophthalmic Surgeon, Medical College Hospital, and Professor of Ophthalmic Surgery, Medical College, Calcutta

IN the Special Ophthalmic Number of the *Indian Medical Gazette*, Vol XXXVI, June 1901, appeared an analysis of my first three hundred cataract extractions. They are included in the one thousand analysed in the present paper.

GENERAL.

General results—The 1,000 extractions were performed on 864 patients, 136 patients having both eyes operated upon. The results were good in 89 per cent, indifferent in 5.7 per cent, bad in 4.5 per cent, and unknown in eight cases. Good results mean vision ranging from $\frac{3}{8}$ to $\frac{6}{6}$ with correcting glasses, indifferent results where sight was poor but sufficient to enable the patient to move about alone, and bad results where sight was lost. The causes of failure in the 4.5 per cent were sepsis in 36 cases, intra-ocular hæmorrhage five cases, detached retina one, iritis two, and iridocyclitis one. Twenty-six of them had been done with iridectomy and nineteen without. In fourteen of the cases that were lost from sepsis mucus was present before operation. On the other hand, eleven cases became septic without any mucus in the sac, and many cases had mucus yet did not become septic (*vide infra*). The indifferent results (5.7 per cent) were due to various causes, such as sepsis, opaque cortex, iritis, glaucoma (one case), over-ripeness, mercurial cloudiness (2), vitreous prolapse, &c.

Double extractions were performed at the same time for unavoidable reasons in six patients. Eleven of the eyes did well, but in one intra-ocular hæmorrhage followed on some 'fits' some hours after operation and the eye was lost. In all other double extractions the second eye was done after an interval of a few days or weeks. In 127 cases the other cataractous lens had been previously extracted. The results were good in 121 and indifferent in six. In 59 extractions the other eye had been 'couched,' with in several cases very good results. The couching did not appear to affect the extraction in any way. In seventeen others the second eye had been lost from small-pox, ulcer of cornea, &c. These gave eleven good, four indifferent, and two bad results. Although these poor results could not be directly connected with the previous loss of the other eye, they show the desirability of further investigation into the possible injurious influence on cataract extraction of previous destructive disease of the fellow eye.

Vision was tested as before by means of square dots made by filling in Snellen's letter squares with Indian ink. Landolt's opto-types were used latterly and proved very satisfactory with illiterate patients.

Family history—Enquiries were made into the history of 351 patients, and a family history was forthcoming in 84 or in 23.93 per cent. The more intelligent the class of patient, the more frequently was such a history forthcoming. Thirty patients gave a history of cataract in the father and 22 patients in the mother. Fourteen had brothers who had had cataracts and one a sister. The rest of the patients had cataractous relatives as follows—Maternal aunt one, paternal aunt one, father and uncle one, uncle three, mother and cousin one, father's mother two, mother's father one, mother and brother one, mother and sister one, grandmother one, son two, daughter one. The age of the affected relative was ascertained in 25 cases. In fifteen the younger generation developed cataract at an earlier age, in three at the same age, and in seven at a later age. Five had more than one relative affected. One case of senile cataract had a history of the disease in three generations. He was aged 50, his mother had it at 55, his grandmother at 65, and a maternal uncle had it in middle age. In three cases husband and wife both had cataract.

Association with other diseases—*Diabetes* was present in only six cases and all did well. Three of the patients had a family history of cataract. The cataract might just as reasonably be put down to heredity as to diabetes. Personally I do not believe in diabetes being a cause of cataract, or even that cataract is common in diabetes. This disease is very common in Bengal, yet no one I have ever asked believed in any connection between diabetes and cataract. It is one of those errors founded on impression which is perpetuated in every book published. Statistical evidence does not support it.

Albuminuria was present in two patients who did well. One got erythropsia for a time.

Bronchitis—Fourteen patients had bronchitis, of whom one did badly. We found afterwards that he kept his sputum in a cup under his pillow.

Epilepsy—Two patients were epileptics, another had had a fit of doubtful nature, and one was the daughter of an epileptic mother. One epileptic, aged 30, became severely epileptic at 20. His sight, perfect before, then became dim. The lenses looked like lamellar cataracts *in situ*, but after removal the nuclei were found to be involved also. The man's father (seen) had been successfully couched for cataract. The other epileptic, a clerk aged 36, had been temporarily insane four years previously, and, on recovering after three months, was found to have diabetes. He had occasional epileptic fits. When first seen he had wedge-shaped cortical

opacities He did well and obtained $V = \frac{5}{6}$ with glasses Among other diseases met with among the cataractous patients were *hemiplegia* (three cases, two good and one indifferent (iritis) result), *phthisis* (one good), *elephantiasis* (two good), *malarial cachexia* (one good), *anæmia* (two good), *leprosy* (severe case) both eyes very good results), *gonorrhæa* (one indifferent and one bad result), *nasal discharge* (one good and two bad results), *dacryocystitis* (one bad result) The cases of nasal discharge were not known to be such before operation In the case of dacryocystitis the sac was extirpated on the left side, probing and syringing, &c, having failed to cure it, and after an interval the right eye was operated on as its sac appeared healthy It could not have been so as the eye suppurated

Age and sex—The average age of 212 cases in the 300 series was 51.7 years In 602 of the last 700 cases it was 53 Of the 602 cases, 382 were males and 220 females The average age of the males was 54.5 and of females 51 This result, in spite of the fact that native women (which most of them were) age in appearance much more rapidly than men, and would thus be shown as older than they really were, confirms my impression that cataract comes on earlier in women The average age agrees with the general belief that cataract comes on earlier in the tropics¹

LOCAL CONDITIONS

Arcus senilis in no way influenced the results As it hides the scar of the incision it is so far an advantage

daging Two hundred and nine cases that had mucus in the sac when put on the table for operation gave 194 good, seven indifferent and eight bad results Four hundred and ninety cases that had no mucus gave 452 good, 21 indifferent and 17 bad results In other words, the indifferent and bad results amounted to 7.16 per cent in cases with mucus, and to 7.76 per cent in cases with no mucus The fact of the presence of mucus is no guide to the presence of pathogenic bacteria, and only a bacteriological examination can reveal the presence or absence of pyococci In the absence of this desirable precaution there must always remain a possibility of pyogenic cocci having eluded our preparatory treatment

Leucoma did not appear to affect the results unfavourably nor did anterior synechiæ

Lens, Ripeness, Size, &c—One hundred and eleven unripe cataracts were extracted with 93 good, nine indifferent and eight bad results Sixty-three overripe lenses were extracted with 57 good, five indifferent and seven bad results Fourteen of these had prolapse of vitreous, two suppurated, one was lost from intra-ocular hæmorrhage and one from retinal detachment

Observations were made in 517 instances on the appearance of the lens before operation and the condition of its capsule, cortex and nucleus after removal, with resulting vision, with the following results—

These figures were compiled because of the importance of knowing what the cortex and nucleus will be like in any case If sepsis be excluded, the most important factor in producing

Appearance of lens before operation		CAPSULE			CORTEX				NUCLEUS				VISION		
		Tough.	Thin	Greasy	Solid	Glutinous	Liquid	Sago-like	Brown	Fatty looking	Lemon	Yellow	Good	Ind	B
Milky white	129	60	57	12	5	16	80	28	92	8	0	22	111	9	9
Glistening white sectors	58	21	30	7	6	6	12	32	29	8	2	11	53	2	1
Grey uniform	110	49	19	42	21	46	18	20	87	1	8	6	103	4	3
Grey striated	46	6	16	24	4	14	4	24	36	3	0	5	44	1	1
Brown	67	32	5	23	21	36	3	0	51	0	7	3	65	1	1
Cribriform	90	41	9	40	18	40	9	15	74	3	0	6	83	5	2
Black	5	2	1	2	3		1		5				4	1	

Pigmentation of the conjunctiva was very frequent, but had no influence upon the result

Pterygium was usually removed before operation, but beyond causing hæmorrhage it had no ill effect when left till afterwards

Conjunctivitis is an important local condition in its effects and requires preliminary treatment when present, more especially if it is trachomatous The presence of flaky or stringy mucus in the conjunctival sac is undesirable, but it often follows the preparatory treatment especially ban-

clear sight is the removal or absorption of the cortex and anterior capsule The latter is got rid of by dilating the pupil and lacerating it over as large a circle as possible, the former by having a large enough incision and removing as much cortex as possible with the lens The prognosis, therefore, and the measures required, depend upon the condition of the cortex The above figures show that whereas all kinds of capsule, cortex and nucleus may be met with in lenses presenting similar appearances when seen before operation, yet certain kinds do accompany certain appearances oftenest Thus *milky-white* lenses most often have a tough or thin capsule (117 out of 129), liquid or sago-like cortex (108

* See Prof Hirschberg's paper on 'Cataract Pricking of the Hindus,' translated in *Indian Medical Gazette*, June, 1894

out of 129), and a brown or yellow nucleus. These are accompanied by the best results and are the only kind of lenses in which it is advisable to omit an iridectomy. The results are good in a great measure because the cortex is soft and escapes readily and the nucleus separates easily. *Lenses with glistening white sectors* are of the same nature, and probably develop into the first kind if left. They also give little trouble with capsule or cortex, and may often be operated upon without iridectomy. *Grey uniform lenses* have often a 'greasy' capsule (42 out of 110), *i.e.*, the cystitome cuts them as if scraping cold bacon, have often a solid or glutinous cortex (21 and 46 out of 110), and generally a brown nucleus. These kinds of cortex make removal very difficult and by becoming subsequently opaque necessitate dissection, while at the operation they cause bruising of the iris and require a larger incision for successful extraction.

Grey striated lenses resemble white striated lenses as regards cortex and nucleus, but their capsules are often 'greasy'. They also require large incisions and iridectomy. *Brown lenses* have often a 'greasy' capsule and glutinous cortex, and as they are large also they require a large incision and iridectomy. By '*embryiform*' lenses are meant grey lenses which are not uniform, but which present transparencies and opacities arranged in a net-like manner so as to resemble a veil. These have often a greasy capsule and a glutinous cortex and are probably early stages of the grey uniform lenses which they resemble in appearance and character and in the treatment they require. *Black cataracts* are rare—only five were met with in the thousand. The ages of the patients were 70, 70, 65, 60 and 40. The capsule was greasy in two, tough in two, and thin in one. The cortex was solid in three, liquid in one, and not noted in one. Iridectomy was done in all, and the resulting vision was good in all except one in whom it was only $\frac{1}{20}$. This patient had had the cataract nine years and the tension was +1. The average duration of the cataract in the five patients was seven years. Two factors are noteworthy therefore, the greater age of the patients and the longer duration of the cataracts.

Measurements were made of the corneal diameter, wound extremities and lens diameters in 61 cases. The average corneal horizontal diameter was 12 mm, the maximum being 14 mm, and the minimum 10.5 mm. The lenses removed from these 61 eyes measured on an average 8.25 mm. The distance between the external extremities of the wound averaged 10.7 mm, the internal measurement available for the passage of the lens being of course less. The ratio of the corneal diameter to the lens diameter was therefore 12.05 to 8.25, or, in other words, the lens diameter may be taken roughly to be a little more than $\frac{2}{3}$ of the corneal horizontal diameter.

Alteration of tension—Tension was increased in 41 cases, 32 gave good results, five indifferent and four bad results. Tension was diminished in 90 cases. 77 results were good, eight indifferent, four bad and one unknown. Vitreous prolapse occurred twice where tension was raised, and six times where it was lowered. In no case was the tension altered beyond + or -1.

Anæsthetic—Chloroform was used in eight cases for special reasons, cocaine was used in 910 cases and eucain in 82. Eucain was given up on account of the pain and increased hæmorrhage it causes. Otherwise it is an ideal anæsthetic.

Preparations for operation—The face, forehead and eyelids were washed with soap and water and then with sublimate solution (1 in 5,000) the day before operation. The eyelashes were cut and the conjunctival sac washed out with sublimate also and a bandage applied. On the morning of the operations this procedure was repeated. Formerly, 1 in 2,000 solution was used for washing out the sac, but latterly 1 in 5,000 sublimate, and more recently still 1 in 10,000 solution of biniodide solution. The results as regards sepsis have improved in the later series. In the 1 in 2,000 series, roughly the first 300, the bad results, mostly from sepsis, reached 6.82 per cent, in the last 700 when weaker solution have been used, but much more care taken in boiling the instruments and preparing dressings, the bad results came to 3.57 per cent. Dividing up these 700 cases among the three hospitals at which they were principally performed the failures were 3.52 per cent at the Temple Medical School Hospital, Bankipur, 3.69 per cent at the Medical College Eye Hospital, Calcutta, and 3.50 per cent at the Mayo Hospital, Calcutta. The instruments were boiled and the dressings carefully prepared in these three institutions, whereas in the first series of 300 the instruments were only boiled for 49 of the operations, and the dressings were not as carefully prepared, so that the results were nearly twice as good in the later series, although lotions of much weaker strength were being used. Atropin was used almost always before and after operation for reasons which will be given later.

(To be continued)

NEURASTHENIA IN ANGLO INDIANS

By E F GORDON TUCKER, I.M.S.,

Acting Professor of Pathology, Grant Medical College,
Bombay

THE term neurasthenia is applied to a complex of symptoms induced by nervous exhaustion, associated with, if not causing, an alteration in bodily nutrition. It is a continued manifestation of mental and bodily fatigue, and the patient, therefore, exhibits constantly a disinclination, or oftener a complete inability, to perform any mental or muscular work. The

important viscera share in this general condition of exhaustion, and their functional value is depreciated, the incidence of the diseased state falling most severely on the organs of digestion, affecting their power, both of assimilation and of manufacturing their special secretions or excretions. Hence a vicious circle is speedily established, which accentuates the depressed condition of mind and body. The only portion of the system which undergoes changes from the normal in the direction of increased activity is that which is devoted to the reception and registration of sensations, whether from increased irritability of this portion of the central nervous system itself, or more probably from the loss of the restraining influence of the higher powers of the mind. Hence sensations, especially visceral sensations, which in the well balanced mind would pass unnoticed, are in these sufferers appreciated to an exaggerated extent, often producing a train of important sensory symptoms which may become the leading features of the case, but without any physical basis to account for them. The ways in which this disease develops itself in Europeans residing in the tropics will be the subject of this paper.

First, the causes which produce the illness in individuals taken generally all the world over are these amongst others. An element of heredity is believed frequently to exist, patients sprung from an emotional or excitable family being liable to afford specimens of this complaint. The prolonged mental stress induced by modern competition of which all dwellers in European cities are now more or less victims, accounts for the condition of many of these neurasthenics. Sudden shock or an irreparable loss may shatter the stability of the nervous system: a railway or other accident may induce the curious train of symptoms grouped under the term "railway spine." It may result from constant practice of bad habits, as sexual excess, the morphia and cocaine habits, and lastly, it may be associated with some organic derangement (as movable kidney) or may appear during convalescence from an acute febrile disease.

From the strain of competition many of our European patients in India are free, holding as they do, posts under Government. But they have in place of this a continual strain upon the machinery of their bodies from the influence of a tropical climate, which, while it is met by complete, or almost complete, adaptation on the part of most, in some is not met by any adaptation at all, and the result is the gradual or sudden breakdown which shows itself in the complex of symptoms known as neurasthenia.

The cases of neurasthenia met with among Europeans in India work out for the most part into the three following groups—

- 1 Of men—the *Hepatic Insufficiency Group*
- 2 Of women—the *Uterine Derangement Group*

3 Common to all classes and both sexes—the *Post-febrile Group*. But we must keep clearly in mind the disease itself, and the effects which the disease ultimately develops. A torpid liver or a subinvolted uterus are not neurasthenia, they are the effects of the nervous breakdown, and it is the exact state of the nervous system which it is our duty to elicit and to treat.

1—*The Hepatic Insufficiency Group*

As stated above, the condition starts with disinclination for work of any kind. First the patient's work suffers. He becomes forgetful and procrastinating, sleep becomes less deep than normal, probably disturbed by dreams. These dreams frequently take the form of what Creighton Browne would call "dreams of resistance," that is to say, the sleeper imagines he is riding or running over great tracts of country, or fighting against impossible odds, or is otherwise engaged in great muscular work, and, as a result on awaking, experiences a great lassitude or bodily exhaustion as if he actually had undertaken some of this muscular work. This feeling of muscular fatigue is, of course a purely nervous exhaustion, and the total result is that instead of starting the day fresh he not only approaches his work already "feeling fagged," but rises later and later in the day, and gradually drops the early morning exercise with which every European in India should start the day. The appetite does not suffer much at first, but from loss of proper exercise the bowels become sluggish, and a recourse to purgatives or laxatives becomes necessary. There is a foul taste in the mouth, especially on rising in the morning, and the tongue becomes constantly furred. The work is dragged through during the day, probably with several manifestations of irritability. The patient finds it very difficult to concentrate his attention on matters before him, and perhaps on reading through some paper he finds he has not grasped the meaning of anything he has read. Headache is a frequent annoyance. Perhaps he has a swimming sensation, or a buzzing in the head, or suddenly rising from his desk or he suddenly loses power of accommodation while reading, and "the letters run into one another."

When the time comes to stop work instead of betaking himself to his golf or evening ride, he feels too exhausted to do anything but drive to his club, where he probably adds to the number of "pegs" which he has consumed already during the day in order to keep his fagged brain up to the working point.

On the habits which the patient will form about this time with regard to the important matter of alcohol hangs the whole future aspect of the case, as we see such cases in India. It is the particular point which the investigator should bring clearly out in the examination of his patient. If the man remains temperate and

does not have recourse to frequent "nippings," he will develop merely nervous symptoms, that is to say, we shall find a sallow irritable man, who will tell you he is becoming daily more and more unequal to his work, that his powers of memory and attention to business are passing away from him, and perhaps he will add "I feel sometimes as if I would like to make away with myself" And all this without any reason as far as the patient can see and without any objective sign of disease that the physician can find, except perhaps some sluggishness of the digestive symptom referable probably to the habits of inaction which the patient is developing.

But unfortunately in the great majority of cases the patient takes refuge in frequent stimulation by means of alcohol, not in great excess at any one time, but by means of frequent small doses distributed over the whole twenty-four hours. This accentuates the depressed condition of the digestive organs. He becomes fat, gross, and altogether out of condition. His tongue is constantly furred, he suffers from acidity in his stomach, the bowels become irritable and irregular. Suffering generally from constipation perhaps with the appearance of hæmorrhoids, he is liable after the consumption of any slightly indigestible food, to an attack of diarrhoea associated with abdominal pain, the formation of much intestinal gas, and the passage of one or two copious stools, which will be found on examination to contain much undigested material. These abdominal symptoms continue and become the leading feature in the case. The patient's attention is concentrated on the condition of the bowels. The morning diarrhoea becomes a matter of daily experience, and probably the patient comes to a time when he never has a solid motion. In this stage the patient probably states that he has chronic dysentery, especially if he passes an appreciable quantity of mucus. But there is no ulceration of the large intestine. It is a chronic catarrh of the mucous membrane of the entire gastro-intestinal tract. Mucus is secreted in abundance, but the digestive glands proper begin to show an insufficiency, fermentative processes are set up in the stomach and the unprepared chyme is passed into a gut where the normal proteolytic and antiseptic fluids from liver and pancreas are not met with, and where peristalsis is abnormally sluggish from the weakness which the intestinal muscle shows in common with all the voluntary and involuntary muscles.

This insufficiency of hepatic function is first shown by a loss of colour in the stools. Probably also deficiency of pancreatic secretion is a factor to be considered. As has been pointed out by Mayo Robson in connection with inflammatory diseases of that organ,* the absence of the pancreatic secretion from the intestine, even though

bile is present in the intestinal canal, leads to pale-coloured motions.

Be this as it may, the stools lose their dark colour, become yellowish, then greyish and finally white like a mass of putty, frequently covered by frothy mucus. This loss of pigment in the stools is often seen in the case of English children when the hot weather comes on, and may be taken, to quote the words of Dr Manson in connection with spue, as "an expression of exhaustion of the glandular structures subserving digestion, the result of one stimulation by certain meteorological conditions which are found in tropical climates, and which are unsuited to the European constitution*."

This condition of the stools is most important to investigate, and should lead to a careful estimation of the size of the liver and the presence of any area of tenderness. The liver should be percussed out in front and behind, but a correct estimation of the condition of the organ is often difficult, as these patients from their sluggish and soaking habits so frequently run to fat. A good way of feeling for tenderness in the liver is to stand facing the patient who is seated, and placing the palm of the hand with the fingers downwards flat on the patient's belly over the lower margins of the right rib-cartilages, to make him bend forwards, at the same time curling the fingers under the rib-cartilages, the patient is then directed to take a deep breath, and while he does so deeper pressure can be made with the fingers below the ribs. The under-surface of the liver can be palpated by this means, and is a very handy method, which was shown me by Dr Crombie of the India Office Medical Board, who must be examining livers almost daily.

We examine such a patient then to estimate the condition of his liver. We know from the condition of the stools that the organ is not functioning properly, and perhaps we find that the organ is slightly enlarged, and there is a uniform tenderness wherever it can be approached by the finger.

The direction which the case will now take depends on circumstances. If the bowel trouble develops, the case will probably take the form of a colitis, and perhaps ultimately develop spue. The views which Dr Manson has urged in his well-known book above quoted, that spue is an expression of hepatic and intestinal insufficiency, are interesting in this connection.

Should the hepatic disorder develop the condition will become one of tropical liver,—a chronic hepatitis, with enlargement and tenderness of the organ with occasional severe attacks of pain in the hepatic region, or should the patient not withdraw from life in the tropics may develop actual hepatic abscess.

Should gastric symptoms become accentuated, the disease may simulate a case of anorexia nervosa in many respects. The patient develops not only a complete loss of appetite, but a positive loathing at the sight of food. Such cases are the cause of much anxiety and difficulty in treatment, as they become so rapidly weak, and all recuperative powers of mind and body appear to be hopelessly lost.

Let us now consider a fairly typical case of neurasthenia developing into a general hepatic and gastric insufficiency.

Case I—A European, aged 38, who had been some eighteen years in various stations in India presented himself, complaining that he was suffering from continued low spirits, loss of memory and power of attention, and that he had a very bad appetite, and was unable to digest the small amount of food, he could bring himself to consume.

Five months before this he had an attack of pain in the hepatic region, and vomiting of bile with diarrhoea. He was only kept in bed about three days but since this he had never felt fit for any exertion, and his digestive system had been continually out of order. During his time in India he had had occasional attacks of fever but not to any marked extent.

Examination showed that there was no enlargement of the liver, there was slight dilatation of the stomach. He was a sallow faced fat man, evidently very self concentrated. The tongue was foul. Over the hepatic region there was a group of dilated venules. The heart sounds were normal, but the pulse intermitted once in fifteen beats.

Enquiry from his friends elicited the fact that he had been growing more sluggish in his habits month by month for the past year and a half. His memory had been getting worse and worse, and as he was in a position of some responsibility, these lapses were a constant source of embarrassment and trouble. He took no exercise and had no interests, he consumed some fifteen peps of whiskies and sodas a day, and smoked fifty cigarettes.

Such a person presents little of interest to the non-medical mind. In fact, the layman sees nothing but a contemptible cypher, who is going from bad to worse, because "he will not make an effort." The consequence is that such a person is soon neglected by his acquaintances and habits of isolation accelerate the morbid process. It is, therefore, to the medical man that it falls to hold out a helping hand, and on his ability to estimate the distance that the patient has passed from what Sir Andrew Clarke used to call "the path of physiological righteousness," and the doctor's tact and firmness in dealing with these most difficult cases that the whole future of such people hangs.

Treatment—The first effort of the physician should be to obtain the entire confidence of his patient. This is obtained, more frequently than many realize by the physician's method of examination. The investigator should elicit not only an account of the leading features of the case, and a perfect knowledge of the conditions of all the organs, taken system by system and step by step, but also a clear picture of the patient's habits and daily life. Sir Andrew

Clarke, whose treatment of such cases was so admirable, used to proceed something like this. First—"of what do you complain?" followed by a patient attention to the account the individual has to give of himself. Next—"describe to me an ordinary day of your life?" "When do you rise in the morning? what do you do between the time of rising and your first meal? at what hour do you have your first meal? what do you eat and drink thereat?"—and so on, taking the patient through the whole of his working and resting during the twenty-four hours. This not only gives the physician a clear idea of the man he has to deal with, but is also frequently a revelation, to the patient as well as to his medical adviser, of the large amount of food and drink which the man consumes and the small amount of work which can be put against it. In fact, shows in what direction the man is moving from "the path of physiological righteousness."

The patient's life should then be carefully regulated. He should plan out his day. The diet should be cut down to what is necessary, and all heavy and indigestible meats are to be proscribed. He should be strongly advised to become a total abstainer, or at any rate should make a hard-and-fast rule not to drink any intoxicants at other than meal times. If he is an inordinate smoker, one cigarette or pipe only should be allowed after each meal. He should endeavour to develop habits of regularity as regards the action of the bowels, he should be told to solicit the action of the bowels at some fixed time in the morning, whether he feels a call for it or not. A teaspoonful of Carlsbad Salts, taken with a half-tumblerful of hot water in the early morning after rising, is a valuable laxative. The condition of the teeth should be examined, and a plate ordered if they are deficient. He should have mild exercise once or twice a day, such as will excite the action of the skin, after which he should be careful to avoid a draught. He should be warned against chills, and should not omit to wear a flannel "cholera belt" at night, especially in the hot weather. The way in which "chills in the liver" are induced in hot climates at night is easily explained. In the first part of the night the temperature is high the patient perspires profusely, and throws off the clothes, probably exposing the skin. Any one who has sat up with a patient all through the night during the cold weather in Bombay, knows how the temperature suddenly falls in the small hours of the morning. At such a time the dilated cutaneous vessels suddenly contract from the cold air and loss of heat from the surface caused by evaporation of fluid. The internal organs under such circumstances must become suddenly intensely congested, especially the liver, stomach, and intestines, and I venture to think that these sudden internal congestions at

night are among the chief causes of "morning diarrhoea"

Cold baths are injurious to such patients, and the use of them should be prohibited

If the digestion is sluggish, the digestive process should be assisted by a bitter, an acid, and some drug which will promote the motor functions of the intestinal canal. But the most important treatment for these cases is in insisting that they shall have complete mental rest. First, the patient should be made to understand that he has no organic disease. Next, he should be induced to give up for a time all work of a responsible nature,—obviously the best way of securing this is to get the patient home to England—failing this, even one month's leave in India will often work wonders. The condition of the patient is simply this—that he has an easily tired brain, which, like fatigue in other organs, undergoes regeneration by rest. As Dr Clifford Allbutt has recently said in a valuable address* "The neurasthenic is one who has never much reserve in time of stress, who needs inordinate time for repair, and who may be exhausted beyond the possibility of full repair. Neurasthenia consists not in utter exhaustion but in lowering of nervous potential. recovery there is but imperfect recovery."

2—The Uterine Derangement Group

It is well known that European women feel the strain of tropical life more acutely than men. They are more liable to severe anæmia than women in Europe, disturbances of menstruation are more frequent and I believe, that the menstrual flow is more prolonged and also more profuse. Feelings of lassitude are more pronounced at these periods, and obscure pains are frequently complained of. It is also well known that European women living in India are less fertile than when living in a temperate climate.

We should, therefore, expect symptoms of neurasthenia to be frequently associated with symptoms of uterine disturbance, and this is so. Whether the neurasthenia determines the uterine condition, or the uterine disease determines the neurasthenia condition is a doubtful point. Personally I believe that both classes are found, but that the latter is much more common in India.

A convalescence from an illness is always retarded in a trying climate, and when one considers how great must be the strain of parturition on a woman under conditions which are frequently novel to her in an up-country station where friends are few, and at a time when separation from her own relatives is more keenly felt, and perhaps in a temperature when even the nights are trying and rest is interrupted, one cannot be surprised that the recuperative powers of the

pelvic organs after parturition should be diminished, and that symptoms of neurasthenia should date from such a time.

The history generally given is that since the last confinement the patient has never felt well. She easily gets tired in mind and body, she lies down a great part of the day, and the ordinary cares of the household become more than she can cope with. Pain in the back comes on after the least exertion, and is diminished but not removed by lying down. Other symptoms of neurasthenia may be found, especially flushings, palpitations, weakness of the legs, and emotional states.

It is remarkable how frequently subinvolution of the uterus is overlooked in these cases. I have seen patients treated month after month for anæmia, dyspepsia, general debility, and what not, when an ordinary careful examination of the pelvic organs would determine a correct diagnosis, and at a time when the uterine condition was early and therefore amenable to treatment, and when the mental exhaustion produced by prolonged pain and anxiety had not developed to an extent sufficient to accentuate the general debility.

It is also an unfortunate fact that when a uterine examination is at length carried out a wrong diagnosis is frequently made. One man perhaps examines bi-manually with the patient on her back, the flaccid uterus falls back, and a diagnosis of retroversion is given. Probably a pessary is put in and the patient advised to take more exercise and a change of air. On examination by another doctor, however, the patient is examined lying almost on her face, and then she is told there is anteversion and another kind of pessary is tried.

Or again these patients have much general pelvic pain and tenderness, and frequently leucorrhœa in addition, and then if the medical man thinks he feels something, he calls it oophoritis or salpingo-oophoritis, and the products of English (and American) manufacturing chemists are tried one after the other. The patient is then generally advised to leave India for good.

If then the patient be a young mother, and is warned that another pregnancy is inadvisable or impossible, her distress becomes complete.

The subinvolved uterus is large, but the shape of the organ is preserved. It is freely moveable and tender on pressure. It is in a state of chronic engorgement, and is often associated with tenderness of the ovaries, prolapse of the ovaries, and general laxity of the pelvic floor. On passing a sound (after excluding pregnancy), the length of the uterine cavity will be found to be increased.

Treatment—Of course, as Herman* points out, the pelvic organs may be tender on examination "because the nervous system is sensitive, not

* The relation of Neurasthenia to Insanity *Brit Med Jour*, October, 1902, p 1208

* Diseases of Women, 1899, p 97

because there is uterine disease. If the neurasthenia can be cured or improved, the uterus ceases to ache." Nevertheless, I venture to think that in the majority of these cases in India uterine disease determines the neurasthenia, and therefore local treatment, as well as general, is called for. So often is it the case that uterine disease following a normal parturition produces these mental symptoms, that I would always, as a matter of routine, give ergot after labour to European women in India, in half drachm doses of the liquid extract, three times a day for three weeks, in order to promote involution, and would keep all such persons in bed for twelve days after delivery.

Before commencing treatment the patient's household should be so regulated as to promote quietude. If there are children in the house the patient will not obtain this necessary quiet. Children are a great anxiety in India as they are frequently ailing, and the mother therefore will be constantly worried about them. The children therefore should be removed to the house of some friend.

The patient should then be warned that she is to lay up for four weeks, passing the day on a couch. The treatment should then be directed to the uterus. Local treatment here is almost always successful, because we get the cases early. By the time that the uterine enlargement has become of such an ancient date as not to respond to treatment the patient has gone home. Ergot should be given in half drachm doses of the extract, twice or thrice a day. Every night and morning the patient should have a hot vaginal douche at 110° F. from an irrigating apparatus, while taking it she should be in the horizontal position. These douches promote uterine contractions and keep the parts clean. If there is any leucorrhœa a little alum may be added.

In the place of exercise, to promote tissue change, massage of the limbs should be practised, if possible by a good European nurse, who by her conversation may interest the patient during the manipulations. This massage should be done in the evening in order to make the patient comfortably tired and promote natural and refreshing sleep. After this a cup of hot peptonised cocoa and milk, such as Savoy and Moore's, should be given, the last thing at night. Rest, ergot, hot douches and massage represent the very successful treatment of these cases.

3—*The Post-febrile Group*

By this I mean cases of neurasthenia developing during convalescence from some prolonged fever, which will be for the most part among Anglo-Indians, enteric. A patient whose strength is reduced to almost nil after three or four weeks of fever naturally feels the strain of climatic conditions acutely, and the illness is more likely to leave a lasting mark on his constitution than if he could convalesce in more congenial surroundings.

The distressing condition to which such people may be reduced is well illustrated by the following example of a woman who was under the care of Lieutenant-Colonel Henderson, I.M.S., in Poona, and to whose kindness I am indebted for permission to use my notes on the case.

Case of Neurasthenia following septic infection

E.C., married aged 58. Has had two children, one alive and healthy, the other died at the age of six from hydrocephalus. Husband is a foreman. Became ill five months ago from the effects of a rat bite, from which there remains a painful scar on the back of the right index finger. She suffered from blood poisoning, as evidenced by the appearance of blotches all over the body, which did not ulcerate, associated with high fever. There were no inflamed glands in the axilla.

Since this acute illness she has never regained her strength. She declares she is unable to sit up in bed for any length of time without going off into "a dead faint," and that she has great tenderness over the hip bones.

Present condition—She is a sallow faced, large bellied woman, talking naturally but languidly, and speaking in terms of exaggeration of her symptoms, which are mainly subjective. Her muscles are flabby, but she is not emaciated. She is a good picture of "flabby woe." Digestive system. Tongue coated with a thick white fur. She complains of much dryness of the mouth. She not only has no appetite but the sight of food disgusts her. Stomach resonance is marked over the left lower costo chordeal articulations, extends downwards to within an inch of the umbilicus, and one inch to the right of the median line. In other words, the viscus is slightly distended with gas, which is consistent with her complaint that she suffers from much wind in the stomach.

The abdominal walls are flaccid, and there has evidently been much loss of subcutaneous fat. Scybulous masses can be felt on deep pressure over the sigmoid flexure. Much tenderness is complained of on pressure in the right and left iliac fossæ. The patient suffers from constipation and piles. The liver dulness extends from the upper border of the sixth rib to the costal margin.

Cardio vascular system.—Pulse is soft, regular, and, according to the chart, varies between 80 and 100. The cardiac dulness is obscured by the gastric resonance. The apex beat cannot be defined. Heart sounds normal but feeble. Her nose frequently bleeds in the morning. There are groups of old purpuric spots scattered over the body especially over the skin and femoral trochanters. Urine, of low spec. grav., deposited phosphates, otherwise normal.

Nervous system.—Intelligence normal, self concentration evident. Is sleepless and restless at night, but is not disturbed by bad dreams. There are points of hyperæsthesia, not localised to particular nerve areas, which are especially marked over the ribs near their angles, over the great sciatic nerve trunks, below the great-sacro sciatic foramina, and over the iliac fossæ. She says that she aches in her bones. There is no thickening of any bone evident.

There is an occasional rise of the temperature in the evening to 101° F., 102° F.

Progress of the case.—The patient went from bad to worse. Her power of assimilating nourishment seemed to be gone. She developed an attack of diarrhœa, in which she died from exhaustion.

I have ventured to write down my views on neurasthenia derived from observation on a considerable number of cases seen in India, because I think that while early and judicious treatment is most successful many of these patients are allowed to go to the bad from the

nature of the case not being properly appreciated. These patients often occupy responsible positions, and their welfare therefore affects many besides themselves

NOTES ON THE ORIGIN OF THE PRESIDENCY GENERAL HOSPITAL, CALCUTTA

By D M MOIR, A M, M D,
MAJOR, I.M.S.

(Continued from p 10, January, 1903)

III Initial Steps

ACCORDING to Prof C R Wilson¹ the Presidency General Hospital constitutes the third in chronological order of the Company's hospitals in Calcutta for Europeans. The first hospital was erected in 1707 for soldiers and sailors, was located in the present Garstin's Place, near St John's Church, and lasted for nearly half a century until the sack of Calcutta in 1756. The Company's second hospital was a make-shift structure in the Old Fort, and was used for about thirteen or fourteen years from 1757 to 1769 or 1770. It is not improbable that the inception of the General Hospital was due to Lord Clive, just as the bringing to Calcutta of its builder, Mr Kiernander, was certainly the result of his influence. At any rate the project was mooted at a Consultation of the Board over which he presided on the 29th September, 1766. There were present at this meeting the Right Hon'ble Lord Clive, President, Brigadier-General John Carnac, Harry Verelst, Randolph Marriott, Hugh Watts, Claude Russell, Thomas Rumbold, William Aldersey, Thomas Kelsall and Charles Floyer, as members.

Verelst was a friend of Clive, he acted as Governor during Clive's absence in 1766, and succeeded him in 1767. The Watts mentioned is not the same individual as the Watts who resigned in favour of Clive in 1758. The former was named Hugh and he was only fifth in Council, whereas the latter's name was William and he was Governor of Bengal for five days² from the 22nd to the 26th June, 1758, when he made over charge to Col Robert Clive. Randolph Marriott was at one time, I believe, in charge of Chittagong, as also was Verelst. The Governor of Fort St George from 1747 to 1750 was a Mr Charles Floyer³. He was dismissed from the service, and was a notorious gambler. So it is unlikely that he was the same person as figured on the Fort William Board of 1766. But we find another Charles Floyer on Lord Pigot's Council at Fort St George in 1776⁴. Possibly the Fort William Floyer of 1766 may have been the same as the Fort St George Floyer of 1776. This Council of Lord Pigot's was the notorious one in which a successful cabal was

formed to kidnap and make a prisoner of the Governor, Lord Pigot. Floyer formed one of Pigot's opposition, he was recalled, was tried before the King's Bench in 1779, and was fined £1,000.

On this same Fort St George Council of 1776 there was a Claude Russel, who may have been the same as the Calcutta Claude Russel, of 1766. He appears to have been a supporter of Lord Pigot. Nevertheless he also was recalled.

Another Governor of Fort St George was Sir Thomas Rumbold, Bart,⁵ from 1778 to 1780. Perhaps he may have been identical with the Thomas Rumbold of the Calcutta Board.

To return to the Consultation of the 29th September 1766,⁶ we find that—"The Board taking into consideration the great inconvenience attending the want of a proper Hospital for the Military, the present one being only a temporary building in the Old Fort destitute of proper accommodations, It is judg'd expedient that a commodious one be erected as soon as possible and the Civil Architect attending the Board on this occasion he is Ordered to point out a proper spot for an Hospital to be built upon, and at the same time to deliver in a Plan of one with an Estimate of the expence."

Here, then, we have one of the earliest references to the proposed General Hospital.

It should be noted that the primary intention was to provide proper hospital accommodation for the fighting forces of the Company,—in other words, the intention was to erect a military hospital, officered by the Surgeons of the Company. This should be kept in mind by those who agitate for the General Hospital being thrown open to the service of all and sundry medical practitioners in Calcutta. This Hospital from its start has been conducted, first by the medical officers of the Hon'ble East India Company, and afterwards by those of the Indian Medical Service. From the very beginning the Government, either Company's, Queen's or Imperial, has found all the money for construction, repairs and maintenance, and has supplied the medical officers and the medical subordinates. This system has lasted for nearly a couple of centuries, from the first hospital in 1707 to what is practically the fourth hospital in 1903. So it seems singularly unreasonable for outside medical practitioners at this late date to claim equal privileges with Government officers in a Government institution of such old standing. The Civil Architect was Mr J Fortnom. He submitted a letter on the 24th December 1766, which is recorded in the Consultation of the 9th February, 1767⁷.

It was addressed to Lord Clive, but unfortunately he had left India by this time, and Mr Verelst ruled in his stead. I say 'unfor-

¹ *Indian Medical Gazette*, January, 1903, p 2

² List of the Heads of Administrations in India

³ Ditto

⁴ *Vicissitudes of Fort St. George*, by David Leighton, 1902

⁵ List of the Heads of Administrations in India

⁶ *Public Proceedings*, Volume for May to December 1766.

⁷ *Public Proceedings*, Volume for January to July 1767

unately,' because there was much vacillating indecision, not to say procrastination, displayed from this time onwards concerning the Hospital by the same members of the same Board who evinced singular promptness in arranging for a new cemetery, in ordering the repairs or rebuilding of Government House, and other projects. But the Hospital did not interest them in the same manner now that the dominant influence of Clive was removed. He wanted a good hospital for his sick soldiers and sailors, and their officers.

Mr Fortnom's letter was as follows — "My Lord and Gentlemen,—Agreeable to your orders I lay before you a Plan of the Town of Calcutta, with my Sentiments regarding the best situation for an Hospital, and burying ground.

It has been my endeavour to pitch on spots for these purposes that the fumes arising may be carry'd by the periodical winds clear of it. Yet it is not in my power to fix on any one for the Hospital where there is not some inconvenience attending it. A place of this nature must necessarily produce a considerable quantity of filth, which will require a running water to carry it off. This convenience cannot well be had on this side of the river without placing it in such a situation as will in some measure subject the Fort to the disagreeable circumstance of offensive Vapours being brought into it by the Southerly winds.

This place I have also marked in the plan at the extremity of the Esplanade (near where the old Hospital stood) and in my opinion it is the most preferable spot of any within a proper distance of the Town and Fort. For besides the height (*sic*) of the ground and advantage of the River there will be a saving of at least ten p Cent.

I can find no spot better calculated for a Burying Ground than the one marked in the Plan.

I am with all Respect

My Lord and Gentlemen

Your most obedt. Humble Servant

NEW FORT,
24 Dec 1766

J FORTNOM
Civil Architect

"Ordered that Place marked out by the Civil Architect for a Burying Ground be immediately walled around, and as soon as it is enclosed that the old one be shut up, and that the plan for an Hospital &c, be referred for further consideration."

The objects Mr Fortnom had in view were to secure a site for the Hospital sufficiently elevated to obtain good surface drainage and avoid flooding, sufficiently adjacent to the Hughli to allow of easy sewage disposal, sufficiently near the Fort and Town for convenience, and, if possible, not to the south of either, so that the prevailing breeze in the hot and rainy months might

not convey noxious effluvia to the inhabitants. He does not seem to have seen his way to obtain the last point, judging from a plan dated 1753,¹ which was not improbably the one he used, I should locate the site chosen by him as lying near the river between the parallel lines now formed by Hastings Street and Bure Street, *ie*, if the "Old Hospital" referred to in this letter was Professor Wilson's first hospital on the site of the Foreign Office.

Mr Fortnom apparently was not satisfied with his selection, because we find an entry next month that — "The Buxey lays before the Board an extract of a letter which he has received from the Civil Architect pointing out two places on the opposite side of the river to build an Hospital upon—the one opposite Surman's Gardens, and the other opposite the Town, but recommending the former as the most eligible spot.

"As Point Sumatra opposite Surman's Gardens is the most proper spot for an Hospital from its being a wholesome situation and contiguous to the River by which the Sick may be easily transported to it and better supplied with necessaries."

These sites were on the west or Howrah bank of the Hughli. The one "opposite the Town" may have been about Rankistown. Surman's Gardens were situated to the south of Tolly's Nullah in the vicinity of Kidderpur, between the Kidderpur Bridge and the Docks. Sumatra Point was on the opposite side of the river, and is now known as Shalimar Point. The accompanying chart of the river shows these places, and is reproduced from an old one in the Port Commissioners' Office through the courtesy of Captain Petley and F A Lovell, Esq.

The Board accepted this recommendation, and at the same consultation,— "Ordered that the Civil Architect be acquainted we have fixed on the above-mentioned place for erecting an Hospital upon, and that he do therefore form and lay before us a plan of the same together with an Estimate of its expenses, taking care that proper apartments be made for such Military Officers as may be obliged to repair to Sick Quarters."

At the Consultation of the 26th August, 1767 some important business was transacted.⁴

The Hon'ble Harry Verelest was President. The members present were John Cartier, Richard Becher, James Alexander, Claud Russell, William Aldersey, Charles Floyer and Alexander Campbell. Mr John Cartier succeeded Mr. Verelest as Governor of Bengal, assuming office on the 26th December, 1769, and he was the

¹ Plan of Fort William and part of the City of Calcutta, 1753, surveyed and drawn by William Wills, Lieutenant of the Artillery Company in Bengal.

² Consultation of 2nd March, 1767, Public Proceedings, Volume for January to July 1767.

³ *Ibidem*.

⁴ Public Proceedings, Volume for August to December, 1767.

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with all the Soundings

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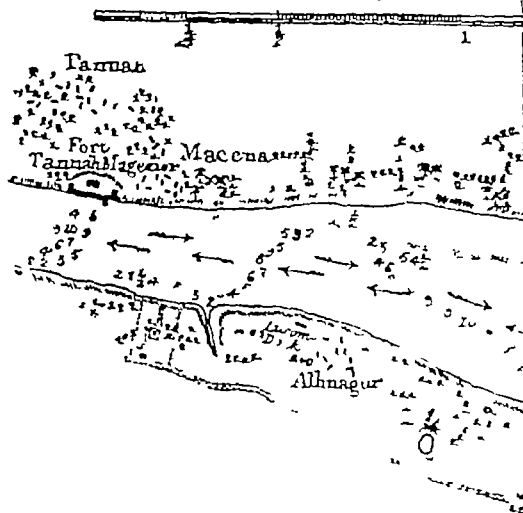
FORT WILLIAM

Surveyed

BY BENJAMIN

1785

English Statute



immediate predecessor of Mr Warren Hastings. A letter was read from the Civil Architect reporting that Government House was "in so decayed and ruinous a condition as to require an immediate and thorough repair." He also submitted "a plan of the Hospital, intended to be built on Point Sumatra together with an Estimate of the same amounting to five Lacks of Rupees, which Calculation is made on the supposition of the buildings being of the very best materials of their kind." The Board "Ordered the Secretary to acknowledge his letter and acquaint him in answer that he is to repair the Government House on the cheapest, best, and most expeditious manner possible." There is a significant silence as to the hospital, all mention of which is omitted in the order.

Mr Fortnom's letter is of such interest that the portion relating to the projected hospital may be quoted *in extenso*. He planned a fine hospital in three pavilions with more accommodation than the General Hospital has had to the present day, with store-rooms and accommodation for the attendants, and houses for three Medical Officers, including one for the official who was equivalent to the present Surgeon-Superintendent. The house for the last-named has only just been completed at the end of 1902. After dealing with Government House he goes on to say—"I also lay (before?) you, Gentlemen, a plan and estimate of the Hospital intended to be built on Point Sumatra, consisting of three separate ranges of Buildings each containing three Wards on a floor and a basement story 10 feet high, which will serve for Store Godowns and apartments for the Black People who attend in the Hospital. There is sufficient room in the Wards for 360 sick persons and the Expence of building it will amount to two Lacks seventy-five thousand Arcot rupees. I have also laid down in the plan three houses, one for the Head Surgeon, the other two for the Assistants, which will cost one Lack seventeen thousand Arcot rupees. The out-houses and offices according to the Plan will amount to forty thousand Arcot rupees. These calculations are made supposing the buildings all of Pucka and of the very best materials of their kind. I beg leave by this opportunity to mention that notwithstanding I attended the Saikal sent down by the Fuzdar of Hughley and marked out the bounds of the spot (four months ago) nothing has been done towards clearing of the riotts' Hutts, on the contrary a number of others since that time have been put up!"

This scheme seems to have been too ambitious and too expensive for the somewhat straitened resources of Bengal at that time, as may be gathered from the Dictionary of National Biography*—

"During Verelest's government Bengal was reduced to a state of great impoverishment owing to the want of specie and the demands made upon its revenue by the assistance given to Madras in the war with Hyder Ali."

At the Consultation of the 16th November 1767, we find the first reference to the site of the General Hospital which was eventually decided on. The Board³ was composed of the same members as those present at the Consultation of the 26th August 1767, with the exception that Mr James Alexander was not present. At this meeting they agreed to purchase Surman's gardens for the Company from Mr Handle, for 10 000 Arcot rupees, which was the price demanded by the owner. Next they considered the site of the hospital. "The President (H. Verelest) also acquainted the Board that the Reverend Mr Kiernander (*sic*) has built a very large commodious Garden House at a proper distance from the new Fort which he imagines with a few additions may be converted into a very convenient Hospital and which he is willing to dispose off. He therefore recommends having it surveyed and the value estimated. He is further induced to recommend the purchasing this House as every Member of this Board must be fully sensible of the tediousness of erecting public buildings and the extravagant charges attendant thereon. Ordered that the Chief Engineer, the Surgeons and Civil Architect do survey this House and report to us next Council day if it will admit of being converted into an Hospital, pointing out the Qualities it at present possesses, and the additions and alterations necessary to render it entirely convenient and useful for the purpose designed, and also form as nearly as possible an estimate of the expences that will attend the same."⁴

We know Mr Kiernander built the East and West blocks of the General Hospital, and that he converted the Garden House into the Centre Block. This extract goes to show that he was also the builder of the Garden House, and it helps us to arrive at an approximate idea of its age. Mr Kiernander reached Calcutta in 1758, this Consultation was held in 1767, so the house must have been built some time during the intervening ten years.

The Civil Architect submitted a letter⁵ stating that he had conferred with the Surgeons regarding the conversion of Mr Kiernander's house into a hospital, also giving a plan and estimate of the same. The Board ordered a copy of this to be sent to the Committee of Works for their opinion, asking them "at what rate they can contract for the completing the Building upon the Civil Architect's plan." I have failed to trace even a copy of the Civil

* Civil Architect's Letter to the Hon Harry Verelest, Esq., dated 24th August 1767

² Vol. LVIII, p. 248

³ Vide *supra*

⁴ Public Proceedings, Volume for August to December 1767, at Consultation on 16th November 1767

⁵ Public Proceedings, Consultation of 9th February 1763

Architect's letter, the original of which is supposed to be at the India Office, so I am unable to ascertain the names of the Surgeons referred to

The Committee of Works¹ reported that they had issued an advertisement "for contracting for the additional Buildings for making Mr Kiernander's House an Hospital" They approved of Mr Fortnoin's estimate for the necessary materials

Next the Committee of Works informed the Board² that "in consequence of the notice they circulated for completing by contract the additional Buildings for the intended Hospital they had received proposals from the following persons—James Dallas and Domingo De Rozario, Gourchuin Taisor, and the Revd Mr Kiernander and Mr Martin Bantot,—which last falls short of the Civil Architect's estimate in the sum of A Rs 25,005-12-0, and they therefore recommended their being accepted" * * *

"Ordered that these letters together with the several proposals be entered after the Consultation and that the Secretary inform the Committee of Works they may offer Mr Kiernander the Sum of 98,000 rupees, which is what our Civil Architect has valued it at and if he agrees to this, that they may then accept of his and Mr Botant's (Bantot's) proposals to contract for completing the additional Buildings for making it an Hospital But that they will please to adjust the Times of Payment somewhat in the following manner—

"One-fifth of the Sum agreed upon when the foundation is laid,—One when the first Beams are laid,—Do when the whole is covered in—Do when the whole is completed And to annex a Penalty of 100,000 Rupees for the non-performance of the contract"

We get a confirmation of the proceedings of this Consultation of the 4th April 1768 in a letter³ bearing the same date from the Board to the Court of Directors in London

"65 In the 45th parag of our General Letter under date 22 Feb, we had the Honor to inform you that we were then in hopes to acquaint you before the final dispatches of that season of our having fixed our choice of a place to build an Hospital upon No conclusive measures were however agreed upon until the 4th April, when in Consultation of that date several proposals were laid before us and we accepted of those offered by the Rev Mr Kiernander and agreed to purchase a large strong new built house of his for 98,900 rupees from the conviction that the purchase of an Hospital ready built would turn out considerably cheaper than building one from the foundation, and as we have experienced that it is

much cheaper to build by contract than any other method we entered into a contract with him for the completion of the necessary buildings to make this House convenient for the purposes of an Hospital, and we are convinced this will be not only the cheapest but the most expeditious way of completing a proper Hospital"

In passing we may glance at the offer made by Messrs Dallas & Da Rozario "Charges that will accrue on completing the Building on the Garden formerly Mr Kiernander's conformable to the Plan intended for Barracks * * * " We now, therefore give in our Proposals, * * * " We finding all materials, for A Rs 2,30,000, but look for such Indulgence as may be advantageous to us, and not detrimental to the Hon'ble Company

JAMES DALLAS

* DOMINGO DA ROZARIO

At a Consultation held on the 25th April, 1768, there were present the Hon'ble H Verelst, Messrs John Cartier, Richard Beecher, James Alexander, and William Aldersey⁴ A letter from the Committee of Works was read and recorded It stated that the Revd Mr Kiernander was prepared to accept the sum of 98,900 Arcot rupees for his Garden House, provided it was paid at once and some part of it in silver Mr Kiernander, however, stipulated that the payments for converting the Garden House into the Centre Block, and for the construction of the East and West Blocks, should be made as follows—

"Two-fifths immediately, two-fifths when the second beams are laid, and the last fifth when the whole is covered in"

He consented to the penalty proposed for non-fulfilment of the contract, to pay cash for materials supplied by the Company, and "to complete the whole in 2 years from the date of his contract" Mr Kiernander asked for permission to live in the Garden House until the work was finished, in order that he might be on the spot to supervise the work

The Board⁴ Ordered that this letter be entered after the Consultation, and that the Secretary inform the Committee they may pay Mr Kiernander the sum offered him for his House, but as he is indulged with an immediate payment, we shall not permit him to live in it until it is completed, nor do we think it necessary since he has built a Bungalow so near that he may inspect the Works without any inconvenience That we will, however, allow him to remain in the House as long as the Company have no use the on condition that he removes out when we for itk proper That the different times of payment be fixed as he requires and one-third of the whole paid in Silver, but as it is necessary Mr Kiernander should give security for the performance of his

¹ Public Proceedings, Consultation of 22nd February 1768

² Public Proceedings, Consultation of the 4th April 1768

³ Public Letters to Court of Directors, volume for 1768 1769, dated 4th April 1768

⁴ Public Proceedings, 25th April 1768

Contract they must insist on his engaging such persons as they may deem for this purpose"

On the 16th May, 1768, there was another Consultation, at which Mr Richard Becher was President. The members present were Colonel Richard Smith, James Alexander, Claud Russell, and William Aldersey¹. The Committee of Works reported that Mr Kiernander acquiesced in the conditions of the contract, but that he submitted an address which they enclosed. The Board considered the latter's remarks "are not without foundation," that "meanwhile he is to begin upon the Works that no time may be lost," and they directed the first advance to be paid as stipulated. The Board "Ordered both these letters be entered after the Consultation and that the Secretary acquaint the Committee of Works in reply to theirs that they may conclude the contract with Mr Kiernander as soon as they think proper, and that we shall make every reasonable allowance to that Gentleman that may be hereafter required, for the circumstances he has represented to them. And although we have no objection to Mr Kiernander's residing in the house in order to superintend the Works as long as we have no particular use for it, yet We must reserve to ourselves the power of appropriating it to any purpose we may think proper."

(To be continued)

NOTE ON THE BACTERIOLOGY OF DYSENTERY AND THE VALUE OF THE SERUM TEST IN ITS DIFFERENTIATION

By LEONARD ROGERS, M.D., M.R.C.P., I.M.S.,
*Lately Officiating Professor of Pathology, Medical College,
Calcutta*

In a recent paper on tropical or amœbic abscess of the liver and its relationship to amœbic dysentery I have drawn attention to the occurrence of this form of disease of the large bowel in India, and hope shortly to describe it more fully with illustrations of the naked eye and microscopical changes in the *Scientific Memoirs*. In nearly every one of the cases of this disease met with at the Medical College hospital death had taken place from liver abscess or other complication, and I have only yet seen two cases in which the dysentery itself appeared to be the direct cause of death. As, however, cases of severe dysentery, except in Europeans, are seldom admitted into this hospital on account of their undoubtedly infectious character, especially when collected together, it was not possible to draw any reliable conclusions as to the relative frequency of amœbic dysentery as opposed to the ordinary form, now very generally attributed to a bacillus of the coli group first described by Shiga in Japan. As this

organism is said to give a serum reaction with the blood of dysentery cases, it becomes a matter of interest and importance to ascertain if the two forms of dysentery can be differentiated by this means, as is maintained by Flexner in America, who has confirmed Shiga's observations, and also to inquire if a similar organism may be found in the common non-amœbic dysentery of India. Although my results are too few to settle this difficult subject, yet, as my opportunities for pursuing the question have come to an end for the present, they may be worthy of record as a guide to others who are working at the dysenteries in India.

Bacteriological examinations of dysentery cases—In about a dozen cases cultures have been made from the wall of the large bowel *post-mortem* in cases of ordinary dysentery, stabs in glucose agar being used. In the majority of them organisms have been isolated which belong to the coli group, but are distinguished from the *b. coli communis*, by forming no gas in the medium mentioned and presenting other features peculiar to those described by Shiga and Flexner as the cause of dysentery, such as their reaction with litmus milk. The failures were chiefly in the earlier cases owing to only one or two tubes having been inoculated in which gas-forming organisms developed, the coli bacillus doubtless often invading diseased bowel wall as it does in cases of appendicitis. In the last few cases more uniformly successful results have been obtained by inoculating several tubes, in one or more of which the non-gas-forming organism appeared in pure culture. Moreover, as will be shown immediately, one of the organisms isolated from an early case and closely resembling in its microscopical and cultural characters, that of Shiga, has given positive serum reactions with a number of cases of dysentery running closely parallel with those obtained at the same time with a culture of Shiga's bacillus itself. These results strongly suggest that the ordinary type of Indian dysentery is of bacillary origin and produced by Shiga's bacillus, or one closely resembling it, and point to further work on these lines being a desideratum.

Serum Reactions in Dysentery with Shiga's and my own bacillus—The above results having afforded some confirmation of Shiga's and Flexner's researches, it was natural to extend the inquiry in order to ascertain if any use could be made of the serum test in the differentiation of the ordinary form of dysentery from the amœbic variety, and to get some idea of the relative frequency of the two forms. For this purpose I obtained bloods from dysentery cases in the Campbell and Police Hospitals, through the kindness of Major Vaughan, I.M.S., and in some of the former also obtained *post-mortems* at a later date. The results were very instructive and are briefly summarised as follows. Fifteen cases were tested at dates from the sixth day of the

¹ Public Proceedings, 16th May 1768

onset of the disease onwards with both Shiga's and my own bacilli, and in every case positive reactions were obtained with one or both of these organisms. In three of the cases no reaction was obtained with Shiga's bacillus, but a positive one with mine, while in two the reverse was the case. In one other case a reaction was obtained with Shiga's, while by mistake it was not tested with mine. In one more case no reaction was obtained with either, and this case showed very numerous amœbæ in the stools during life, and the typical lesions of amœbic dysentery *post-mortem* with amœbæ in the floors of the ulcers. In all the remaining cases positive reactions were obtained with both Shiga's and my own bacilli. In the considerable majority of the cases reactions were positive up to dilutions of 1 in 40 and occasionally to 1 in 100, being thus very similar in degree to those obtained in typhoid fever. The reactions were least marked in cases of less than ten days' duration. In four cases in which positive serum reactions had been obtained, *post-mortems* subsequently revealed the ordinary as opposed to the amœbic type of the disease, and in three of them cultures were made from the wall of the bowel, and pure growths of an organism resembling Shiga's bacillus were obtained. Further, six of the cases were tested with a culture obtained from Europe as Flexner's bacillus with negative results, and similarly Krause's dysentery bacillus gave negative serum reactions in six cases.

While allowing that more extensive observations on the above lines are necessary before any final conclusions can be arrived at on the difficult subject of the differentiation of the dysenteries, still the above results strongly point to the conclusion that the common form of Indian dysentery, so prevalent in our jails and other institutions and not followed by the large tropical liver abscess, are produced by Shiga's bacillus or one very like it, and that they can be differentiated from the much rarer and usually complicated cases of amœbic dysentery by the positive serum reactions with Shiga's and my own bacilli, which reaction is not obtained in amœbic dysentery. The fact that these conclusions closely agree with those previously obtained by Flexner in America enhance their value. The negative serum reactions obtained with Flexner's bacillus may be due either to slight differences in the old and new world diseases, or to my having been supplied with an incorrect culture.

It may also be mentioned that differential leucocyte counts have been carried out in these cases without any remarkable results having been obtained. In cases uncomplicated with malaria both the total number of white corpuscles and the percentage of the polynuclears tend to be rather high, without, as a rule, attaining to a degree of well marked leucocytosis. In amœbic dysentery, on the other hand, both leucocytosis and an irregular fever are commonly marked

features, but it is often difficult to say how much these are due to the bowel affection or to the frequent complications met with in these cases.

GLIOMA OF THE RETINA

A LECTURE DELIVERED BEFORE THE
AHMEDABAD MEDICAL SOCIETY

BY DR B H NANAVATTY, F.R.C.S., &c,
Fellow of the University of Bombay,
Fellow of the Obstetrical Society, London,
Vice President of the Ahmedabad Medical Society

INTRODUCTORY

GENTLEMEN,—Last month when we met in this hall, it was generally believed that another member of our Society, who was then good enough to state, that he was writing a paper on an important subject, would read it this month and furnish us with his experience regarding the same. As, however, we were to be deprived of this pleasure, at any rate for the present, and as no paper was forthcoming for the month, our energetic secretary, Dr J Benjamin, to whose zeal and that of his colleague, Dr Modée we owe, I think to no small extent, the formation of this Society, sought me out, and asked with a somewhat perturbed look, if I would not come to his assistance and read a paper on some subject, so as to fill up the gap which would otherwise inevitably occur.

In response, then, to his invitation, I have hurriedly put together brief notes of some cases of "Glioma Retinae," met with in my ophthalmic practice, which, I believe, will prove interesting to you, particularly, as cases like these which only occasionally come into the hands of the operating surgeon, even in an hospital, are still more rarely met with by the private practitioner outside.

I have had, within the past 2—3 years, several cases of glioma of the retina, and these, with one exception, presented the usual symptoms described in all text-books, *viz*, that a malignant growth of the size of a large lemon or larger still, was seen protruding from within one orbit, the eye-ball was destroyed, and the patient had no vision of the affected eye. There was a foul scanty discharge from the tumour which was covered with dirty yellow scabs, and there was occasionally slight bleeding from within. Pain did not seem to be very great in any one of these cases.

The patient was usually a young child of 4—5 years in a broken down and cachectic state of health, for, as is generally the way with the natives of India, cases are only brought for treatment, not in their early stage, but when they have considerably advanced.

The last case, which came under my observation, was one of special interest, because of the formation of a metastatic tumour of a similar

nature over the right side of the face as the affected eye

This metastatic tumour was in no way a continuation of the tumour in the eye, because it was situated over the cheek about $1\frac{1}{4}$ inch below it, with a clear and healthy strip of skin intervening between the two

These, gentlemen, are the symptoms of a fully formed and advanced glioma, but I believe it will be interesting to you to know something about the nature of the disease, its early stages, which present well-marked clinical symptoms and the way in which it gradually progresses onwards, till its course is arrested either by the knife of the surgeon, or by death, which, in some cases, is indeed a welcome relief to the unfortunate patient, worn out as he already is, by hæmorrhage and offensive discharges

Clinical course of the disease

Glioma of the retina (or gliosarcoma as it is sometimes called) is a malignant intraocular growth which starts from the retina. It is found in early life, either intrauterine or during the first three or four years of infancy, though occasionally cases are met with up to 8 or 12 years. If not interfered with, it continues growing from within the eye for a variable period of time, it then ultimately bursts through the different structures of the eye-ball, invades and infiltrates the surrounding tissues and shows a marked tendency to local relapse and metastasis until it finally destroys life in two or three years

Virchow's view, that this tumour originated from the neuroglia, and which was for a long while disputed and opposed by celebrated histologists like Heule, Bruch and others, is now fully accepted as a correct one, and gliomata therefore may be found wherever in the normal condition, neuroglia may be found also

The real nature of the tumour not having been fully demonstrated or understood, up till within the last 30 years or so, it is not surprising to find that the same disease was known to and described by surgeons of old under various names, such as those of fungus hæmatodes, fungus medullaries, encephaloid growth, &c

It is interesting to note that, according to the age, *i.e.*, the duration of this disease, we can generally differentiate between its different stages, each of which is characterized by well marked clinical symptoms

1st stage—The disease rarely comes into the hands of the Surgeon in its initial or what may perhaps be more aptly termed the ophthalmoscopic stage (since diagnosis could only be made by the ophthalmoscope at this time), because there are no external changes in the appearance of the eye, nor has the little patient at this early stage any complaint to make. Even the parents are not able to notice the blindness (of one eye) of the child, so early as

to lead them to seek advice or assistance. At this time the ophthalmoscope reveals brilliant-white or pinkish-white shining spots, with newly-formed blood-vessels, different from those of the retina

2nd stage—The second stage is known as that of the cat's eye or the amaurotic cat's eye. The eye to all external appearances looks like a normal one, but the pupil no longer has its normal black appearance, on the contrary it presents a peculiar pupil reflex, *viz.*, a pink or yellowish lustrous look (something similar to what is noticed in the cat's eyes, hence the name cat's eye) which has been likened by different writers to the sheen of gold, of silver, or of mother-of-pearl, and which can often be noticed by even the least intelligent of parents. It will be easily understood, that the reflex is readily seen and recognized, for the fundus is more and more pushed forwards by the tumour, and the eye in consequence has become strongly hypermetropic for the time being. By the ophthalmoscope, or focal illumination, the tumour could now be seen to project into the vitreous cavity, at this stage the pupil is dilated, and the iris somewhat sluggish, whilst vision is either completely destroyed or reduced to a mere perception of light and darkness. This peculiar reflex is characteristic of the disease, and I have had a case or two where this was distinctly seen

3rd stage—During the third stage, in the progress of the disease, marked glaucomatous changes occur in the eye. The explanation of this change is not far to seek. As the *glioma* increases in size and encroaches further into the vitreous, tension markedly increases, and the usual glaucomatous changes therefore increase accordingly. The cornea becomes dull, shows slight diffuse opacities, the pupil becomes immobile and dilated, whilst inflammatory symptoms, in the form of congestion of the scleral and episcleral vessels and pain, often supervene

4th stage—Is that of either partial or general protrusion of some part of the eyeball

5th stage—The tumour has now grown so large that it bursts through the various tunics of the eyeball in different ways, and this constitutes the fifth stage of the disease

(1) The disease may now pass along the optic nerve fibres and, thus bursting through its sheath, invade the orbital tissues, or (2) it may burst through the sclerotic, or (3) it may pass through the cornea either in a mechanical way by pressure or by causing suppurative keratitis with ultimate protrusion of the growth through it

6th stage—The growth having now burst through the structures of the eyeball, grows rapidly, spreading from tissue to tissue with which it comes into contact. It thus forms a sprouting extra bulbar mass, which, in course of time, may involve the eyelids, the surrounding structures and even the brain causing severe cerebral symptoms and death

The spread of the disease from one eye to the other, by continuity through the optic nerve and tract, does not, as a rule, occur, though there is one authentic case on record, where the disease was shown to have extended from one eye to the other in this way

After removal of the growth local relapses are not infrequent, their appearance being the more likely, the later the operation is performed

As mentioned in the beginning of this paper, metastasis often occurs in distant organs or parts of the body, and is generally produced by the agency of the blood-vessels. Metastasis is most frequently found in the parotid and sub-maxillary glands, than in the mediastinal and mesenteric glands, the bones of the skull, sternum, &c

It has also been known to occur in the liver, kidneys, but in one of my cases, this secondary tumour was situated on the cheek, a broad and clear strip of skin separating it from the glioma of the eye

Duration—One to two and a half or three years. Every case of glioma, not interfered, leads, without exception, to the death of the patient, from either general marasmus or septicaemia caused by the septic products or from loss of blood, cerebral disturbances or some intercurrent disease

Age—The age at which this disease is met with, varies from between foetal life to the tenth or twelfth years, most of the cases, however, occur between the first and 4th year

Congenital glioma are generally bilateral

Causes—No definite causes are known except that heredity plays some part in the production of this disease. Two or more children of the same parents may suffer, and a history of a cancer or some form of malignant growth in the family may be elicited. Although often maintained, no connection between trauma and glioma has been yet proved

Treatment—This is clear enough, for it in no way differs from that adopted for malignant tumours in general. The diagnosis being fully established, there is no doubt that the early and complete removal of the growth, with the eyeball, offers the only chance of safety to the patient. Enucleation of the eyeball is absolutely necessary, and it is important to remember that the optic nerve should be cut as far backwards as possible. After removal of the growth, the cut end of the nerve should be examined microscopically

If this is of normal size and contains no glioma cells, a good result may be hoped for. If, however, glioma cells be found in the cut ends of the nerve, the piece remaining in the orbit should be removed as far as possible. When the disease has invaded the eyelids, they should be removed also. Even the removal of the orbital bones and cauterization of the surrounding parts may be necessary

I may mention that in all the cases which came under my observation, the eyeball was removed with the usual precautions, and the patients made excellent recoveries, gaining both in health and weight shortly after. Even in the last-mentioned case, the eyeball, as well as the secondary tumour on the cheek, were removed, and the patient made an excellent recovery in about six weeks' time, but whether this recovery was permanent or only temporary, I am unable to say with certainty, as none of the patients have yet returned, though the parents were advised and warned to bring their children back to me or to inform me, on the slightest recurrence of the disease

A Million of Hospital Practice.

A CASE OF HERNIA OF THE BLADDER ASSOCIATED WITH INGUINAL HERNIA OF THE SAME SIDE

BY W J WANLESS, M.D.,
Miraj, S M O

ANANT YASHWANT, a Biahmin boy of 8 years, was admitted into the Presbyterian Mission Hospital, Miraj, July 8th, 1901. He complained of a swelling in the left inguinal region, which was first noticed one year after birth. General health good

Description—Examination shows an ovoid swelling, occupying the region of the external abdominal ring and inguinal canal on the left side. The swelling, the size of an infant's fist, is somewhat more globular in shape than of an ordinary inguinal hernia, but otherwise, not unlike, the cough impulse is present. The swelling is apparently completely reducible, and patient says it is larger at sometimes than others. Swelling disappears when lying down

Operation—July 10th. Preliminary preparation for 36 hours in the usual way. Chloroform narcosis, time 1 hour

The sac was exposed in the usual way, it being intended to do the Bassini operation. In separating the sac, while it was slightly distended, it appeared to be double, not unlike an hour-glass, the upper portion protruding through what appeared to be the internal inguinal ring. As the dissection was continued, this sac was found to have no connection with the lower one. It was opened and found to contain bowel which was reduced and the sac ligated by a purse-string suture at the neck

The lower portion now remained and had the appearance of a direct inguinal hernia. Supposing it to be a second hernial sac, it was opened and clear fluid escaped. The escape of the fluid and the thickness of the sac led to the suspicion that the bladder had been opened, and this was verified by the use of a catheter passed per

urethrum The urine was now drawn off, after which it was found that the bladder protruded through an opening directly into the lower end of the inguinal canal and to which the wall of the bladder was adherent posteriorly. About one-third of bladder seemed to be external to the peritoneum. There was apparently no peritoneal covering of the protruding portion of the bladder. The incision in the bladder was closed by a purse string of catgut, over which two rows of Lembert stitches were applied, investing upon itself the summit of the protruding portion. The wall of the bladder was then separated from the pillars of the ring sufficiently to reduce it beneath the abdominal wall. The conjoined tendon and internal oblique were then sutured to Poupart's ligament over the summit of the bladder. The external oblique was then sutured and the cord placed between this and the skin as in Halstead's operation. Fine celluloid thread was used for the two deep layers and a subcuticular stitch of catgut for the skin. Operation was completed with a dressing of acetaniled and bichlorid gauze.

Subsequent History—After the operation it was elicited that the patient was in the habit of urinating frequently, but the act was otherwise normal. The wound was redressed the second day and seventh day and subsequently every alternate day until the 28th. With the exception of about half an inch at the upper end, the wound healed *per primam*. On the 16th day patient complained of great pain at glans and at base of penis at micturition, which was frequent. On the 28th he passed a small body which, on examination, proved to be the knot of a catgut ligature incrustated with a deposit of lime salts. Micturition was subsequently painless and normal in frequency. He was discharged as "cured" on the 31st July, 22 days after the operation.

The following are the main points of interest—

1 Shape of the swelling, not unlike that of an ordinary hernia. No depression separating the two sacs was discovered before operation.

2 The presence of an ordinary inguinal hernia through the upper end and a hernia of the bladder through the lower end of the inguinal canal, two distinct openings in the abdominal wall through which each hernia separately protruded.

3 The apparent reducibility of the hernia of the bladder, notwithstanding the fact that it was adherent to the abdominal wall at the point of exit.

4 The failure of the patient and his friends to observe any connection between the act of micturition and the size of the swelling.

5 The passing of the unabsorbed catgut ligature into the bladder and subsequently extruded *per urethram*, and which, when introduced into the wall of the bladder, did not penetrate the mucosa.

TWO RAPIDLY FATAL CASES OF TYPHOID WITH MARKED PNEUMONIC SYMPTOMS FROM THE ONSET

BY K PRASAD, M.B.,

MAJOR, I.M.S.,

Civil Surgeon, Shwabo

TYPHOID fever in India, especially among the natives, is nowadays receiving careful attention of every medical officer. The following two cases, which occurred in the jail in my charge, are, in my opinion, sufficiently interesting to be added to the record of those already reported—

Case No 1—A Burman male, aged 23 years, sentenced to six months' rigorous imprisonment, was admitted into the jail in good health on 7th March 1901. For the next five weeks the man was never sick or sorry, and at the fortnightly weighments his weight showed a steady increase. His employment, previous to imprisonment, was cultivation, but in the jail he was employed on well work intra-murally. On 10th April he suddenly got unwell and was admitted into the hospital for fever and cough. His evening temperature that day was 105.4° and bowels were noted as costive. Next day his morning temperature was 104° , and that in the evening 105° . As dulness over the base of the left lung was also noticed, the case was diagnosed as that of lobar pneumonia. During the night the bowels moved once with the help of calomel. On the 12th his morning and evening temperatures remained the same, *i.e.*, 104° , but in the morning of 13th it came down to 103° , and the patient was reported to have slept well. Friction sounds were now heard all over the chest, and as the bowels had not moved for nearly 36 hours, a dose of castor oil was given. In the evening temperature rose to 105° again. On the 14th his general condition became decidedly worse. He had no sleep during the night, his tongue looked very dry and conjunctivæ congested. Later on in the day he became speechless. He had three motions in the day and the same number during night, and it was thought they were due to the oil given the previous night. Temperature varied between 104° and 105° . On the 15th, *i.e.*, the sixth day of his illness, the man was in a hopeless condition, quite unable to speak or move and simply gasping for breath. At 9 A.M. he passed away.

Post-mortem appearances—Dura mater looked natural and brain surface very much congested. Upper part of the left lung collapsed and the bases of both lungs consolidated. Spleen soft, congested and enlarged (14 oz.) Liver hyperæmic and enlarged (55 oz.) First half portion of the ileum was covered by patches with reddish black water, and six of them in the lower half presented an ulcerated spot in the centre.

Case No 2—Also a Burman male, aged 37 years, sentenced to two years' rigorous

imprisonment. He was admitted into the jail in good health, with a weight of 129 lbs. On 8th August 1901, and for the next ten months he went on enjoying his usual health. His last weighment before he fell sick was on 8th June and showed an increase of 4 lbs over the original weight. Outside the jail he used to work as a coolie. During his incarceration he was chiefly employed on wheat-grinding, and since 9th May was working as a keyman. On 16th June he was suddenly taken ill and admitted into the hospital with fever 103° . His bowels were then stated to have been regular. In the evening his temperature came down to 102.6° , but next morning it went up to 103° again. He was reported to have taken his nourishment and slept fairly well. In the evening he had one natural motion, and temperature was recorded at 102.4° . On the 18th the patient looked weak, and dulness was noticed over the back and at the right axilla. There was very slight cough and no sputum. Temperature this day in the morning was 102.8° , and in the evening 104.8° . During the night the man became delirious, and early in the morning of 19th, after three days' illness, he died at 6 A.M.

Post-mortem appearances—No meningitis. Brain surface congested, and the ventricles contained few drops of serum. Heart substance looked anæmic, otherwise natural. Right lung showed hypostatic congestion of the posterior surface and consolidation of the entire base. Left lung presented an emphysemic appearance with hypostatic congestion of the posterior surface. Liver hyperæmic and enlarged and looked double of the natural size (5 lbs). Spleen soft, congested and very much enlarged ($1\frac{1}{2}$ lbs). Last portion of the ileum presented three small ulcerations and looked congested, and dark red in colour. Other parts of the intestines were natural.

The cases, to my mind, belong to the class to which Osler has given the name of mixed infection, and French and German writers, that of pneumo-typhus, the two diseases begin either concurrently or one rapidly follows the other, the conditions induced by one organism favouring the growth of another.

The points of interest are, I think—

1 Sudden onset and absence of the period of incubation. The patients being prisoners, had they felt the feelings of lassitude or inaptitude for work, they would have certainly reported sick long before they actually fell down. Their weight also showed that they were well up to the day they were admitted into the hospital.

2 Short duration. One case ended fatally within six days and the other within four. I have not read of typhoid cases ending so rapidly without serious complication like perforation.

3 Absolute want of signs and symptoms indicating typhoid during life. With the exception of ladder-like chart for three or four days, there

was nothing even to create suspicion of the poison. I had no means of applying microscopical and bacteriological tests.

4 Obscure origin of the disease. Shwabo is one of the military stations of Burma, where British troops are kept, and the place as well as the local jail is well known for its being healthy and free from typhoid. The deaths mentioned above are the only ones which have occurred from all causes in the jail during the last two years, and as one death followed the other after an interval of fourteen months, I cannot conceive any connection between the two. Both the cases were sufficiently long in the jail to exclude the possibility of having brought the poison from outside. When solitary cases like these do occur in one's practice he is forced to the conclusion that cases of typhoid might occur anywhere with the same ease and in the same manner as do those of lobar pneumonia, and to prevent their occurrence is as difficult as to stop pneumonia altogether.

5 Diagnoses of typhoid in the cases in question were made only *post-mortem*. It is therefore evident that none of the usual precautions as regards disinfection of stools or urine could be taken. No evil effect has so far been noticed, and I only hope that no other similar case will occur and that the jail will continue its reputation as being one of the healthiest in Burma.

NOTES ON A CASE OF CONGENITAL ABSENCE OF BOTH EYEBALLS

BY P. CARR WHITE, M.B.,

MAJOR, I.M.S.,

Agency Surgeon, East Rapputana

THE following case, owing to its extreme rarity, seems worth recording, and in the textbooks at my disposal there is no mention of this condition.

An infant, male, aged four months, was brought to the Victoria Hospital, Bhamptur, with the following history—

The mother states that from birth till two months of age, the eyes were tightly closed, but as the child had no pain or inflammation, they did not trouble themselves about it.

When two months of age they applied some oil for a few days, and then succeeded in opening both eyes. On examination I found the following condition, which was precisely the same in both eyes: the lids were closed, the palpebral fissure was very small, the upper lid was flat and, if anything, slightly concave, the margin of the upper lid was slightly overlapped by the margin of the lower lid, and the upper and lower lids had a few eyelashes. On separating the lids, the ocular surfaces of which appeared quite normal and lined with conjunctive, the orbit was empty, and there was absolutely no trace of an eyeball in either socket.

The orbital cavities presented exactly the same appearance as they do after recovery from enucleation of the eyeball

The child, except being weakly, had no other defect, and although both eyes were stuck together from birth till two months of age, the mother assures me he had no pain or discharge from the eyes

There appears no possibility that any disease of the eye could produce entire absence of both eyeballs and an absolutely identical condition in both

NOTES ON TWO CASES OF CÆSAREAN SECTION (PORRO'S MODIFICATION)

By ANNA L. CHURCH, M.D.,

Physician in charge

No I

P. K., HINDU, primipara, a native of Lahore, aged 20, was admitted to the Lady Aitchison Hospital for Women, Lahore, about 5 P.M. on 18th November 1901. Labour pains had begun two days before, and the membranes had ruptured previous to admission. The patient was undersized and markedly rickety, with legs so bowed as to cause a waddling gait. The child's head was free above the brim, the foetal heart sounds good, and the mother in good condition. The following are the patient's measurements

Height, 3 feet 11 inches
External conjugate, $5\frac{1}{4}$ inches.
Distance between iliac crests, $7\frac{1}{2}$ inches
Distance between anterior superior spines, $7\frac{1}{2}$ inches
Internal conjugate, $2\frac{1}{4}$ inches

The pelvis appeared to be of the generally contracted flattened type. The presentation was a vertex in the first position. About three hours after admission I performed Cæsarean section. On opening the abdomen, the uterus was packed round with hot aseptic towels, and a longitudinal incision made in the anterior wall. The placenta was found in the line of incision and was torn through, a leg was seized and a live male child extracted weighing 6 lbs 3 oz. The hæmorrhage was insignificant. The uterus contracted well, and the edges of the abdominal incision were pressed behind it, thus hitting it outside the abdomen. It was then resolved to terminate the operation by Porro's method as being rapid and safe, and serving also to sterilize the patient. Koehle's serenooid was accordingly placed round the cervix, the uterus amputated and the stump fixed in the lower end of the wound, the remainder of which was closed by through and through silkworm-gut sutures. The operation was done by lamplight, and the old extraperitoneal treatment of the stump was preferred to the newer retro-peritoneal method as being quicker and easier. The patient made an excellent

recovery, the stump came off on the eleventh day, and mother and child were discharged well on 23rd December

No II

M., Hindu, a native of Lahore, a primipara, aged 16, was admitted to the Lady Aitchison Hospital for Women about 9 P.M. on 21st May 1902. The membranes had ruptured before admission, and the child's head was still above the brim. The mother was not exhausted, and the foetal heart sounds were good. The patient said she had been unable to walk for some months, and on examining the pelvis, she was found to be the subject of osteo-malacia. The pubic arch was narrowed, and the cavity so contracted as to leave no doubt as to the impossibility of delivering a living child by the natural passage. I accordingly performed Cæsarean section about midnight, following the same procedure as in the last case, except that, as the placenta in this case was situated on the posterior wall, it was not interfered with till after the extraction of the child. The presentation was a vertex and the infant a female. The patient made an uninterrupted recovery, and she and the infant left the hospital well on 27th June, except of course for the crippled condition caused by the osteo-malacia. It is to be hoped, however, that the removal of the internal genital organs will check the progress of the disease.

SERUM TREATMENT OF TRAUMATIC TETANUS A SUCCESSFUL CASE

By FIROZ DIN MOHROOF,

Assistant Surgeon, Gujranwala

A MAN named B., about 22 years of age, strong and muscular, of middle height, porter by occupation, was admitted into the Civil Hospital of Gujranwala on 16th August 1902, suffering from a stab wound of left side of his abdomen, which was received in a fight. The wound was situated between 10th and 11th ribs in anterior axillary line on left side. From the wound was protruding a piece of omentum (great) which was congested and bleeding, and was the size of a hen's egg. The man had four other wounds besides the one mentioned above. All the wounds were produced by a pointed and sharp-edged weapon.

Condition on admission—The wound of abdomen mentioned above was covered with a dirty old black cloth. The wound was bleeding freely. The patient was lying in a wretched state, somewhat weak from the loss of blood. The pulse was soft, 108 a minute, respiration was 28 a minute.

The abdomen was tense and tympanitic, painful on palpation, no flatus or motion was passed since the infliction of the wound, temperature in

mouth was 100 4 The patient had vomited three times out of the hospital, and once only in my presence The contents were free from blood admixture

Operation—The patient was put on operating table Dirty cloth removed, bleeding point secured, and wound thoroughly antiseptised The instruments and dressings were completely sterilized with boiling soda solution Wound was enlarged about $1\frac{1}{2}$ inches more The omentum was ligatured in eight parts, this was divided into two, and four parts were again ligatured into one separate ligature, and the protruding portion cut off The stump was reduced and sutured between the cut lips of the muscles which were injured. The abdominal fascia was brought together by catgut continuous sutures The skin wound was united by silver sutures A small gauze drain was inserted in the lower angle of the skin wound

Opium was administered regularly from beginning, and no food was given for first 24 hours, only small bits of ice were given in the following 24 hours

18th August 1902—First dressing The wound united, a little serous discharge from the lower angle of the wound

20th August 1902—Sutures removed, bowels acted the first time since the injury The thin serous fluid was still flowing from the draining angle of the wound, temperature was normal and pulse quiet

24th August 1902—Discharge still continuous

28th August 1902—Patient walks about, has disturbed bandages and dressings to-day, which were re-adjusted

30th August 1902—The left rectus is stiff, and skin over it is more reddish

31st August 1902—No discharge from the wound, there is pain in the site of the wound

1st September 1902—Lock-jaw present, bowels not acted The following treatment was adopted. Hot water enemata morning and evening The following mixture was given three times a day—

Hydrate of Chloral	gr	x
Pot Bromide	gr	xv
Tr Cannabis Ind	m	v
Aq		3i
also		
Soda Sulpho Carbolat	gr	v
Aq		3i

was given once daily, and a linseed meal poultice $12'' \times 12'' \times 5''$ was applied and changed every six hours

5th September 1902—Treatment continued, patient is stiff all over the body, nearly all the voluntary muscles are implicated

8th September 1902—Patient in a miserable state, cannot open his mouth, breathing is difficult, spasms are very frequent, least stimulus sends all the muscles into a violent spasm

10th September 1902—Patient same, eating, drinking and breathing is difficult Patient feels hungry but cannot eat

Serum treatment, 12th September 1902—The serum which was wired for, from Calcutta, arrived to-day, before it was injected the following notes were taken All the muscles are stiff, flexors and extensors of limbs are all implicated, muscles of abdomen and of back are all tense Muscles of neck are tense and prominent Chloial rash is thick on the abdomen Patient is bathed in perspiration, and is nearly exhausted out with disease and insufficiency of nourishment Mouth cannot be opened He did not sleep for two days and three nights The patient complains that his internal organs are also in a state of spasm I could not understand this, it may be a spasm of internal muscles of abdominal wall, or it may be a spasm of stomach and intestine His pulse was 110 Temperature was 99 6

The serum was injected in 3 c c dose in the right flank after aseptic washing of the spot and its etherisation, and its effect watched in four hours, the patient said that the internal spasms have lessened. The outer spasms are same

13th September 1902—As outer spasm of muscle was the same, I determined to inject a larger dose of antitoxine to paralyse the toxine which was maintaining the tonic spasm of muscles, therefore 7 c c. was injected into the right thigh After seven hours, spasm showed some abatement

15th September 1902—10 c c was injected in left thigh, and there was distinct improvement The paroxysms were less frequent Sweating stopped Mouth opened better, pulse fallen to 98 per minute

17th September 1902—10 c c was injected in right thigh, distinct improvement, patient has had good sleep, has taken fluid nourishment

18th September 1902—Improved considerably, talks more coherently and long No serum was injected as supply had run short

23rd September 1902—Patient remained the same during the non-injection period The spasms were still present, a fresh dose of 10 c c. was injected into the left arm After 12 hours the spasm paroxysms were stopped

24th September 1902—Paroxysms stopped altogether, but some stiffness still present

25th September 1902—Some pain in knee, stiffness of muscles, although less, is still present

26th September 1902—Patient given rice and milk as diet

28th September 1902—Patient walks about a little distance Very little stiffness left

Conclusions—This case is cured only with the serum of tetanus (prepared at Lille) Medicines were also continued, but I think the latter were of very little use

THE
Indian Medical Gazette

FEBRUARY, 1903

THE INQUIRY INTO LATHYRISM

WE are very glad to announce that the Government of India have determined to hold an inquiry into the paraplegic affection known as lathyrism, due to eating certain pulses, and especially the pulse known as *kesari* or *teori*, and Major Andrew Buchanan, M.D., I.M.S., and Mr Stockman, M.R.C.V.S., late Professor of Pathology in the Veterinary College, Edinburgh, have been appointed to conduct the inquiry*.

We have before us an outline for the inquiry drawn up by Major Andrew Buchanan, which admirably sums up the prevailing views and opinions on the nature and causation of this strange and interesting disease.

Lathyrism is no new disease in India, and has been recorded ever since the British Government in India took serious notice of the famines of this country. Readers of that charming book, *Rambles and Recollections*, by Colonel Sleeman, will remember his description of whole villages full of paralytics, the result of a long continued use of this pulse, and perhaps the best account of the disease from a medical point of view is that given by Dr Living, then Civil Surgeon of Allahabad, in the 6th, 7th and 12th volumes of *Annals of Indian Medicine*.

For the past few years the Central Provinces have suffered severely from famine, the result of the failure of the monsoon rains, and the Civil and Medical Officers, who have grappled so successfully with the difficult questions of famine relief, have all been struck with the great prevalence of lathyrism. Mr J B Fuller, now Chief Commissioner of Assam, while in Jubbulpore in 1899, wrote of its prevalence both in the Central Provinces and in other parts of Upper India, Mr Cleveland wrote that it is "urgently necessary to stop the spread of lathyrism, no one can really appreciate the extent of the evil until he has the paralytics collected before him. Recently I saw

100 paralytics collected from two villages close to my camp." Another Civil Officer says that "the spread of lathyrism is assuming alarming proportions."

The disease is by no means confined to the Central Provinces, during the scarcity of 1897 we saw many cases in Shahabad District in Behar, and for the last few years the annual reports of many States and Provinces have made allusions to the prevalence of the disease.

We need not enter into any full account of the complaint, but will briefly run through the heading of the outline of the inquiry as drawn up by Major Buchanan.

The pamphlet begins by quoting opinions as to the prevalence of the disease, and as to its causation. In the Central Provinces it is usually (but not always) attributed to the continued use of *teori* (*kesari*) as a food. Lt-Col Chatterji, I.M.S., points out that he has seen *kesari* used in Bengal without harm, but that there it is the practice to soak the *dal* for a long time before it is boiled. The prevalent opinion on its causation may be summed up in the following words from Scheube's new volume on *Diseases of Warm Countries*—"Lathyrism (*lathyrisme médullaire spasmodique*), so called on the suggestion of Cantani, is a disease with a spastic spinal paralytic course, and which is attributable to poisoning with various kinds of the family of papilionaceæ lathyrus (chick pea or common pulse)."

The pamphlet from which we quote then goes on to show that a similar paralytic affection is not uncommon in cattle, and it is a question of importance whether one form of what is called *kumri* is not due to the continued use of this grain by horses.

The districts chiefly affected have been Saugor, Damoh, Hoshangabad, Jubbulpore and Bilaspore. An important point to determine is the particular variety of grain which is responsible, *teori* (or *kesari*) is the one usually blamed, and of it there are at least two varieties, the large and small *teori*. Then the reasons for growing this pulse need to be inquired into, as well as the possibility of prohibiting its growth. Is the *teori* crop increasing? Is it eaten alone or mixed with other grains? Why was lathyrism not observed after the earlier of the recent famines in the Central Provinces? The effect of cooking, these and other questions

* Mr Stockman, we understand, has recently been appointed Principal Veterinary Officer in the Transvaal and may not be able to stay.

have to be settled and form part of the present inquiry

Then the pamphlet goes on to point out many interesting medical points still to be determined, the stages of the disease, which Major Buchanan divides into five, the analogy of the disease to other affections such as ergotism, pellagra, atrophicism, lupinosis, &c. The nature of the poison is still undetermined

The whole inquiry promises to be of great interest and value, and we congratulate the Government of India and that of the Central Provinces on their having undertaken it

THE D P H AND THE MEDICAL SERVICES

At the time that the new regulations for candidates for the diploma in public health were issued, we pointed out that the practical effect of them would be to prevent medical officers of the Army and Indian services from obtaining these degrees. It was therefore, with pleasure, that we read in the proceedings of the Medical Council of 1st December 1902, that the Advisory Board of the Army Medical Service had approached that Council for the purpose of so altering the regulations, that medical officers in that service could compete for these valuable and necessary diplomas. The Advisory Board asked that the four months' course of laboratory work now done at the Conjoint Board Laboratories should be held to be equivalent to the six months' course at present required by the General Medical Council. We are not surprised to find that the Council refused to accept this, and we think that they were well advised in allowing two months of this time to count with four extra months of laboratory work at any recognised institution

As regards the second point, namely the certificate of diligent work for six months under a medical officer of health, we at the time protested against the rule in the case of medical officers in the services, and being impracticable and pretty nigh useless, and we are glad to see that the Council have allowed six months' work under one of the military special sanitary officers to take the place of that prescribed under a medical officer of health. It is quite obvious also that an officer of the Royal Army Medical Corps does not need any special instruction in hospital administration, though this

is very necessary for a civil medical man wishing to qualify in public health, hence the Council agreed to omit this regulation

The net result of this is that an officer of the Royal Army Medical Corps can present himself for the examination for the D P H after six months' special work under one of the military sanitary staff officers and after four months' work at a laboratory. This is eminently reasonable and satisfactory

The question, however, which more nearly concerns us is, how is an officer of the Indian Medical Service to qualify for presenting himself for this diploma. As regards I M S officers in military employ, it would be possible to allow them to work under one of the sanitary staff officers for six months in India, and then such officers must spend four months at laboratory work at home, on special or on ordinary furlough. But what of the majority of the Indian Medical Service who are in civil employ? It would neither be advisable nor useful to ask them to spend six months under one of the Sanitary Staff officers, hence we venture to think that officers intending to qualify in this way should be appointed Deputy Sanitary Commissioners and should work as such under the Sanitary Commissioners of the various provinces. The training is exactly what is required. Indeed we do not see why six months' work as Superintendent of a Central Jail should not be held also as the equivalent of six months' work under a Sanitary Staff Officer. The fact is every Civil Surgeon in India, whether he has the D P H or not, is practically a Health Officer and is as deeply concerned with sanitary problems as any medical officer of health in places in England

It is eminently desirable that Indian Medical Service officers should be offered every encouragement to take this special diploma, and we hope that the Sanitary Commissioner with the Government of India will take the matter up at once and be able to arrange for the Indian Medical Service as the Advisory Board has just arranged for the Army Medical Service

LONDON LETTER

THE LISTER JUBILEE

LORD LISTER was born in the year 1827, he was admitted a Fellow of the Royal College of Surgeons of England on the 9th of December 1852. He has, therefore, attained the age of 75 years, and has been a member of the medical

profession for a period of 50 years. His professional jubilee has been celebrated by the issue of a special "Lister Jubilee Number" of the *British Medical Journal*, in which his career, his labours and triumphs have been narrated by a series of distinguished men who had opportunities of watching and appreciating the stages of those scientific researches and developments which have resulted in the establishment of antiseptic and aseptic practice on a secure and lasting foundation to the great improvement of medical art and the great benefit of humanity. Surrounded in his youth by a scientific atmosphere, obtaining every available advantage in general and professional education, imbibing from his father, Mr Joseph Jackson Lister, the inventor of the Achromatic Microscope, a love of research and discovery inspired by close association with such men as Sharpey, Erichsen and Syme, Lister was well fitted and inclined to devote his life to scientific pursuits. His early essays were in the field of physiology, and his observations on the coagulation of the blood and on the inflammatory process indicate marvellous patience, accuracy and ingenuity. As he rose in his profession and began to feel the responsibilities of his position as a surgeon, his ardour and industry were, fortunately for mankind, directed to the improvement of the healing art and the saving of life and suffering. How he accomplished these objects, working continually on a rigidly scientific basis, proceeding step by step to evolve and apply the principles which the labours of Pasteur and his own observations and experiments revealed to him, this record admirably displays. His early Edinburgh life is sympathetically portrayed by his successor, Professor Thomas Annandale, F.R.C.S., his Glasgow inquiries and efforts are described by Sir Hector Cameron, his subsequent Edinburgh developments are narrated by Professor John Chiene, C.B., F.R.C.S., and his later London work is chronicled by Professor W. Watson Cheyne, F.R.C.S., F.R.S.

Several distinguished Continental Surgeons contribute articles which indicate how the Listerian system has been received and adopted abroad.

The record as a whole is a most interesting and fascinating one, and one hardly knows which to admire most, the ingenuity and penetration which prompted and pervaded the early departures, or the impartiality and progressiveness which characterises later proceedings, or

the breadth and sympathy with which all cognate scientific advances and reforms were assimilated and applauded. Add to these qualities and achievements a charming personality, a singularly upright and sterling character and a devotion of life to good aims and objects of every description, and the estimation in which Joseph Lister is universally held is easily understood.

THE INTRODUCTION OF THE ANTISEPTIC SYSTEM INTO INDIA

Listerism, for various reasons which can be readily understood, encountered difficulties in its introduction into Indian practice. I am competent only to write of Calcutta in this matter, but I daresay that my experience there is fairly descriptive of other parts of India. I was appointed Second Surgeon to the Medical College Hospital in April 1874, and continued to act in that capacity till June 1875. The hospital had been a hot-bed of every description of septic disease, and the mortality following surgical operations was deplorable—not far short of 50 per cent. I found the system of dressing in use to be a mixture of carbolic acid and linseed oil applied by means of lint or cotton wool. No means were adopted to the person, the part or the asepticised instruments, nor to protect the wound from the acid which often caused symptoms of poisoning. Septic complications continued to manifest themselves, though to a less extent and in less severe forms. Edward Lawrie, who had recently joined the service after having been indoctrinated by Lister and Syme in the antiseptic system in the Edinburgh Infirmary, was the Resident Surgeon. He tried to introduce the system in Calcutta, but appliances were wanting, and skilled assistance not obtainable, and his efforts were mostly failures. My experience during these 15 months did not inspire a warm admiration of the use of "modified antiseptics." During 1876-7, I was at home on furlough and spent nine months in studying Lister's work in the Edinburgh Infirmary, spending two or three hours daily in watching his proceedings. I soon found that his results were different from anything that I had previously seen and infinitely superior. On re-joining the College Hospital in April 1879, I endeavoured to carry out his method as faithfully as I could, but found great difficulty in obtaining suitable appliances and had to contend with unsatisfactory assistants and refractory patients.

In time the system came to be understood and more and more efficiently applied, and the better it was worked the better did the results become. I was greatly assisted by my colleague, Daniel O'Connell Raye, who soon came to appreciate the value of the system and most ingeniously adapted local materials to its purposes.

In the issue of this Journal for September 1897, I published a table showing the results of my practice during the quinquennia 1879-83 and 1886-90. The case mortality of the first period was 14.7 and of the last 8.1. The improvement was shown as regards all the principal operations. The death-rates of amputations were, for example, 26.2 and 7.1. Surgical statistics in other large Indian hospitals have undergone a corresponding improvement doubtless for the same cause.

TRYPANOSOMA DISEASE IN MAN

Trypanosoma infection is well known in veterinary practice. In the "surra" of horses and mules, and the "nagana" of cattle, this parasite is effective cause, and its introduction is procured by the agency of insects.

The first discovery of trypanosoma in the blood of man was made by Dr. George Neprew in Algeria between the years 1890 and 1898. He described the parasite accurately, but did not associate it with any special symptomatology. In May 1901 Mr. R. M. Forde, Colonial Surgeon, Gambia, W. Africa, found in the blood of a European with anomalous symptoms a parasite which he thought was a filaria. He showed the case to Dr. J. Everett Dutton, of the Liverpool School of Tropical Medicine, who identified the parasite as a trypanosoma and subsequently worked out the case in a Liverpool hospital. He found that it presented the following symptoms: (1) General wasting and weakness, (2) a temperature of an undulating character with alternating rises and falls lasting a few days, (3) local œdema, (4) congested areas on the skin, (5) enlargement of the spleen, and (6) constantly increased frequency of pulse and breathing. Dr. Patrick Manson saw and studied the case in Liverpool and, returning to London, diagnosed a case from the symptoms which it presented as trypanosoma. After repeated search the parasite was found. Observers in India ought to be on the look-out for cases of this sort.

K McL

17th December, 1902

Current Topics.

LEPROSY AS SHOWN IN CENSUS RETURNS

THE census of 1881 showed a considerable increase in the number of lepers in India, which was probably due to the inclusion of a large number of cases of leucoderma, which, even educated members of the lay public still persist in confusing with leprosy. Then followed the death of Father Damien, and the fashionable sensation and excitement worked up over this event led to the appointment of the Leprosy Commission in India in 1890-91.

We need not here deal with the somewhat vague findings of this Commission, suffice it to say that the 1891 census, taken while the Commission was still in India, showed a marked general decline in the number of lepers and, as Mr. Gait says, they had "no difficulty in disposing of the cry that leprosy was an imperial danger."

The census of 1901 shows a continued decrease in the prevalence of leprosy in Bengal, the number of lepers now recorded being no less than 19 per cent less than it was ten years ago. This improvement is shared by all parts of Bengal except Manbhum and the Sonthal Parganas, which showed a much wider diffusion of leprosy than in 1891. These two districts border on Bankura and Baidwan, where the disease has always been very prevalent, being from 151 to 265 per 100,000 of the population, whereas in all Bengal the ratio is only 48, in United Provinces 23, in Punjab 19, in Madras 35, and in Bombay 27 per 100,000. The disease is therefore more common in Bengal than in any other part of India, it is also very prevalent in Assam. Curiously in Bihar leprosy is far more prevalent than in the adjoining districts of the United Provinces.

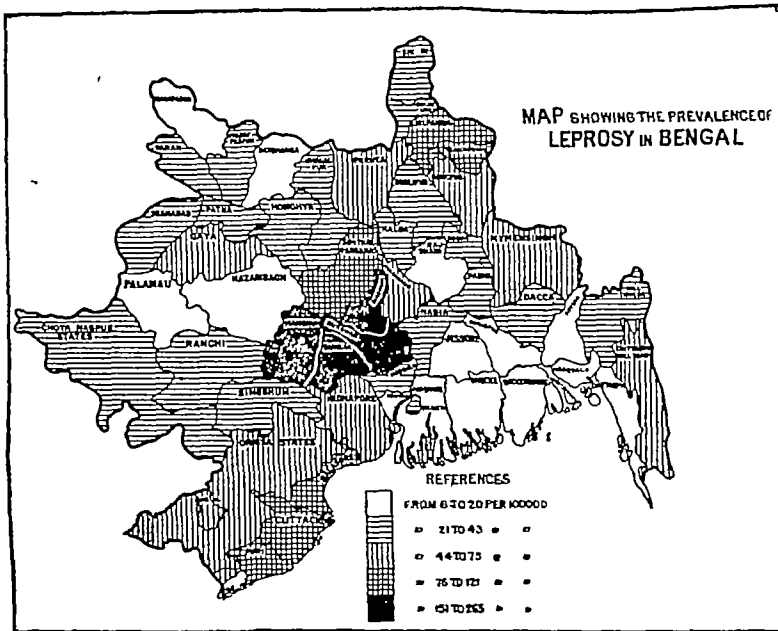
So long as the conditions which conduce to the spread of leprosy are obscure, no satisfactory explanation can be given of these variations, and on this point the Report of the Leprosy Commission give us no help.

The map which we here reproduce, and for the loan of which we are indebted to Mr. Gait, the Census Commissioner, shows the local distribution of leprosy in Bengal. It is very rare in most parts of Eastern and Central Bengal and in North Bihar, it is more widely diffused in South Bihar, North Bengal and in Orissa. The disease becomes more intense in Manbhum, and the three districts, Baidwan, Bankura, and Birbhum form the great centres of leprosy in Bengal, and the last two districts have a larger proportion of lepers than any other part of India.

The findings of the Leprosy Commission do not help us in understanding these facts, the districts with many lepers are no more prosper-

ous nor have the less "poor and destitute" than those districts with a less proportion of leprosy, they are neither more insanitary nor more infected with syphilis than the more free districts, nor can any connection be traced between the degree of leprosy and the diffusion of cholera in these districts, nor can it be said that the diffusion of the disease "varies inversely with the dryness of the climate," for Eastern Bengal, in which leprosy is very rare, has a much more humid atmosphere than the districts where leprosy is most rife

persons, *i.e.*, people blind of both eyes, a decrease of 2,621 from the figures of the previous census of 1891. Mr Gait states that in the decade preceding the last census there were "no less than 15,987 successful operations for cataract." These figures would seem to indicate that the decrease in the number of blind is fully accounted for by the greater activity of the medical establishments. It is also pointed out that the net decline in numbers is due to the smaller figures returned for the higher ages, *i.e.*, the ages of cataract.



The conclusions, therefore, of the Leprosy Commission of 1891 do not help us much. What then of the rotten-fish-tuberculosis theory so persistently and eloquently propounded by Mr Jonathan Hutchinson, F.R.C.S.?

On this point Mr Gait made many inquiries, and he concludes that this hypothesis finds no corroboration from the results of the census, "very little fish," he writes, "is imported into Burdham, Bankura, and Manbhum, and it enters but slightly into the diet of the people," and most certainly the use of *fresh* fish can have no share in the etiology, for a glance at the above map will show that leprosy is almost unknown in the 24-Parganas, Khulna, Backergunge, Faridpur, Jessore, Noakhali and Chittagong, the districts intersected by the delta of the Ganges where the inhabitants eat largely of the fish which abound in the rivers and streams of that picturesque portion of Bengal.

THE CAUSES OF BLINDNESS IN INDIA

ONE of the most interesting chapters in Mr E. A. Gait's Census Report is that which deals with "infirmities," *viz.*, insanity, blindness, deafmutism and leprosy.

We propose to here deal with two of these subjects, *viz.*, blindness and deafmutism. In the census of 1901 there were counted 70,859 blind

persons, *i.e.*, people blind of both eyes, a decrease of 2,621 from the figures of the previous census of 1891. Mr Gait states that in the decade preceding the last census there were "no less than 15,987 successful operations for cataract." These figures would seem to indicate that the decrease in the number of blind is fully accounted for by the greater activity of the medical establishments. It is also pointed out that the net decline in numbers is due to the smaller figures returned for the higher ages, *i.e.*, the ages of cataract.

Some statistics given by Captain R. H. Maddox, I.M.S., in our columns are then quoted, and this led to an inquiry from other Civil Surgeons, with the result that a table is quoted, which shows that in nine Bengal districts, from 1896 to 1900, there were successful cataract operations performed upon 3,584 men and 2,362 females.

The following figures show the proportion of blind persons per hundred thousand of the population—Bengal, 90, Bombay, 85, Madras, 89, United Provinces, 170, and Punjab, 291.

These figures are of great interest. It is a well known fact that no matter how skilled or enthusiastic a Civil Surgeon in Bengal is, he can never hope to emulate the doing of many Civil Surgeons in the Punjab in the matter of cataract or stone operations, the reason being simply that these diseases do not exist in Bengal to the same extent. Take Gaya, Patna, and Shahabad, the three stations where the table, above alluded to, shows most cataract operations to have been done: their total works out at 2,185, whereas in a single station in the Punjab (see *I. M. G.*, December 1902, p. 491) one single Surgeon was able to perform 1,718 such operations. The following remarks of Mr Gait are to the point and indicate one great factor in the etiology of cataract. He writes: "The prevalence of blindness is to a great extent determined by climate. It is most frequent in a hot and dry climate where the glare and dust are highly prejudicial to the eyesight, and is comparatively rare in a cool or damp country, where a profusion of green vegetation rests the eye, and where there is a comparative absence of dust," and Mr Gait goes on to show that the distribution of the blind is in accordance with these considerations, it is most common in dry hot Patna and Shahabad, less common in the Chota Nagpur plateau, and then follow *longo intervallo* Orissa, Central and Eastern Bengal.

Of course, cataract is only one cause of blindness, but it will be found that the relative prevalence of cataract is pretty closely indicated

by the above remarks Small-pox is of course a cause of blindness, but it frequently only attacks one eye, and the report shows that Orissa, which suffered five or six times more from small-pox than any other part of Bengal, has a comparatively small blind population. Blindness in the early ages of childhood is most often due to corneal opacities, but it is from 40 onward that cataract becomes the most fertile source

DEAFMUTISM IN BENGAL

ONE of the most satisfactory features of the Census Report of 1901 is the continued decline in the total number of persons suffering from the following infirmities which were especially investigated, namely, insanity, deafmutism, blindness and leprosy. This decline was a striking feature in the Reports of 1891, and the recent census shows that the decline has continued and is general all over India. Much of this is no doubt due to the improved methods of registration, which are especially noticeable in the recent reports. We have already dealt with the question of blindness and leprosy, and here we extract some remarks from Mr Gait's paragraphs on deafmutism.

The occurrence of deafmutism is somewhat more common in India than in Europe, but the difference is not marked. The following figures show the relative prevalence in the various provinces—Bengal, 7, Punjab, 8, Madras, 6, Bombay, 4, and United Provinces, 4 per 10,000,—a decrease of no less than 24 per cent over the figures of the previous census. This result is, no doubt, correctly attributed to the elimination from the returns of persons who are deaf only. In Bengal deafmutism is most prevalent in Sikkim, Champaran, Darjeeling, Kuch Behar, Saran, Mozufferpore, Purnea, Bhagalpore, Durbhunga, Dinajpur and Pabna. These except Pabna, are all Himalayan or Sub-Himalayan districts. This agrees with the returns for the last census, which also showed that deafmutism was frequently combined with cretinism and goitre, and there is no doubt that especially in Champaran, Mozufferpore and Durbhunga and the hill districts goitre is a very common complaint, and hundreds attend hospital every cold weather for treatment.

As regards the plains district of Pabna, we find that both in 1881, 1891 and in the present census this district holds a high place for this infirmity, especially the Sirajganj sub-division, which has a rate of 119 deafmutes per 100,000. It is said that the disease is most common among those who live on the banks of the Jamuna river, among whom also goitre is very common.

No real connection has been shown to exist between deafmutism and insanity, though it must often happen that deafmutism, cretinism and insanity are more or less confounded by non-medical enumerators.

As regards the proportion of the sexes affected with deafmutism, we find, as is the case with most congenital malformations, that males preponderate over females. In India, as in Scotland, the ratio is 9 to 6. This infirmity being a severe handicap in the struggle for existence, the highest proportion of deafmutes must necessarily be at the earliest ages, and after twenty there is found a steady decrease.

Of course the census returns make no distinction between congenital and acquired deafmutism. The most recent researches as quoted by Politzer (in the new English Edition of his great book on *The Ear*) show that deafmutism is acquired in the great majority of cases. In Europe (Poltzer *op cit*, p 820) Switzerland has the largest number by far, viz, 24 per ten thousand, and England has 5, France, 5.8, Germany, 9.6, Italy, 5.4, Spain, 4.6, United States, 6.6, and Canada 10, per 10,000. Heredity and intermarriage between blood relations are shown to be the most frequent indirect causes of congenital deafness.

DESICCATING PLAGUE GERMS

WE have received a series of pamphlets from Dr Bhagat Ram Sawhney, M.B. (Durb.), M.R.C.S., on the desiccation of plague infected dwellings. Dr Sawhney is Chief Medical Officer at Jammu, Kashmir State, and has had practical experience of his desiccator in the outbreak which occurred last year in Jammu from December 1901 till May 1902.

Acting upon Haffkine's statement that dry heat of 122°F or moist heat of about 158°F kills a culture of plague bacilli in less than 15 minutes, Dr Sawhney devised his desiccator. The desiccator consists of an iron cylinder with a lower air-chamber into which open a number of straight inlet-flues, and an upper fire chamber with a removable lid, provided with a set of bent exit-flues, the principle of the machine is to draw the air into the lower and pass it out in a heated condition by the exit-flues. The machine can be carried from one room or place to another on a pole by means of chain handles.

Dr Sawhney gives a lot of experiments to show that by use of various forms of fuel the temperature of a room can be raised in 20 minutes to well over 122°F, he finds that it would cost with wood or dry cowdung as fuel about 3 or 4 annas to desiccate a room of 12 ft by 14 ft, and taking four rooms as the average of a native house, it would probably cost about a rupee a house.

One great advantage claimed by Dr Sawhney for his desiccator is that everywhere the Native of India will not object to it, and it involves no turning out of the house boxes, clothes and articles of furniture.

We are not quite convinced as to the effects claimed by Dr Sawhney in the Jammu outbreak. The disease broke out in that city on 18th

December 1901, and an enormous exodus took place, 16,000 of the inhabitants having fled. Desiccation began on 10th March, and coincidentally with the increase of desiccation there was a steady fall in the number of seizures and deaths from plague, even though the population returned in great numbers, but at the same time there was in action, a still more powerful desiccator than that of Dr Sawhney, namely, the increasing heat of the sun.

Kashmir experience also shows the good effect of burning cowdung fires in houses during an outbreak, but we imagine this must be very thoroughly done to have any good effect. We can hardly suppose that the hot air and smoke from a cowdung fire is sufficient to kill plague germs lurking in thatched roofs and cowdung plastered floors, the smoke and heat would drive away and possibly suffocate the rats, but the fact remains that such measures carried out by the people themselves were found very effectual.

We commend Dr Sawhney's pamphlets to our readers. We can understand that his desiccators could be of great use in outbreaks in jails or such institutions, at any rate Dr Sawhney's views on plague are eminently sound, for he believes that plenty of sunlight and fresh air are the best of disinfectants, and this, we think, is a generally held opinion in spite of the millions of buckets of perchloride-solution which have been thrown around at the time when plague policy meant "doing something," and the non-medical public have a firm belief in "disinfectants" even when, as often seen, the cupful of phenyle or the handful of carbolic powder only successfully conceal the odour without in any way attempting to destroy it or the germs of disease which may or may not accompany it.

PNEUMONIA MORTALITY AND PROPHYLAXIS

At the recent meeting of the American Association of Medicine (see *Journal A M A*, 5th July 1902) much attention was given to the important question of present day mortality and prevalence of pneumonia, and it is ably discussed in an editorial note in the *Journal*. The discussion pointed out that, while all the other infectious diseases had been materially increased, the "mortality from pneumonia has increased, almost in proportion to the density of the population" of the American cities. In another paper it was stated that the mortality from pneumonia at the present time was over 30 per cent in public hospitals and 18 per cent at least in private practice. The editorial goes on to say that "in spite of all boasted sanitary improvements and hygienic advance, this dread disease is ever increasing its ravages, especially in our crowded centres of population."

So that we have not only to face an increased prevalence but an increased mortality. It is doubtful indeed if the treatment of pneumonia has advanced at all, and though a history of the

treatment of pneumonia is an epitome of a history of medical fashions, yet it is by no means clear that a patient has, at the present day, in the hand of the most skilful physician, a better chance of recovery than he would have had in the hands of Hippocrates. A dozen years ago when Sturges published his monograph on pneumonia the case mortality was put at 19 per cent, it is now 30 per cent. This points to an increased virulence of type.

So much for treatment, but what about prophylaxis. It is usually assumed that the pneumococcus or other germ causing the various forms of pneumonia enters into the respiratory passages through the air, and indeed it is said that the pneumococcus is commonly found in the mouths of perfectly healthy persons. Therefore the seed is of less importance than the soil, and as we cannot do anything to affect the seed—an intangible entity in the air—we must direct our efforts of prophylaxis to the soil.

In India, statistics of pneumonia do not exist for the general population, but we have accurate statistics of the large Jail population, among whom pneumonia is a common and dreaded disease. We find, then, that in the past five years there have been 8,618 cases of pneumonia in all the jails of India. The months of greatest incidence are January, December and March, and the lowest August, July, June, May and April. This points to two factors: (1) want of ventilation, by closing of doors and windows, and (2) chill from the cold air.

Dr Cunningham of Alabama has reported series of epidemics in a crowded prison in the United States, and overcrowding with bad ventilation is, we think, the main cause of pneumonia in such institutions. Therefore our methods of prophylaxis must be good ventilation without chill, good food, and rigorous disinfection of sputum and all other excreta of pneumonia patients.

We agree with the editorial in our *Chicago contemporary* that the problem of pneumonia mortality and its prophylaxis is one of the most urgent that presents itself to the sanitarian of the 20th century.

Apropos of the value of the serum reaction in cases of Malta fever, we have permission to mention the following case. Major Ronald Ross, FRCS, FR S, was called in to see a case "presenting all the symptoms of *kala azar* in Ireland." The case had come from India, and was diagnosed Malta fever as a result of the agglutination test. Major Ross took the blood, and it was again tested by Dr Grünbaum, who is one of the highest authorities on the serum tests. His result was negative, although the patient was still suffering from fever, and he has since died.

Major Ross is of opinion that there is not the smallest similarity between *kala azar* and Malta fever, of which he studied many cases.

with the late Captain M L Hughes, R A M C, in Malta, but Major Ross does not pin himself down absolutely to the theory that *kala azar* is absolutely nothing else but malaria

WE look forward with interest to the result of the inquiry into the plague inoculation mishap in the Punjab. The Commissioners are Sir L Jenkins, Chief Justice of Bombay, Lt-Col G Bomford, M D, C I E, Principal of the Medical College, Calcutta, and Major D Semple, R A M C, Director of the Pasteur Institute, Kasauli

WE extract the following from the *Journal of the American Military Surgeons*—

"By arrangement of the Norwegian Association of Military Surgeons in Christiania, measurements were taken during the summer drills in 1900 of the soldiers' height and also of the length of their feet. Altogether 6,443 soldiers were examined. This unusually large amount of material has been worked out by Capt H Blyn and published in the *Norsk tidsskrift for militærmedicin*

To begin with, the author endeavours to answer the question *Is there any difference between the right foot and the left with regard to length and breadth?* In 28.9% of the men the feet were found to be of the same length, in 32.2% the right foot and in 39.9% the left foot was the longest, the difference however is seldom more than 1 mm and it differs in various parts of the country. In 6,443 men the total length of the right foot was 170,808.4 cm, while that of the left was 170,842.6 cm

In 20% the right and left foot have the same width, in 25% the left foot is the widest and in 55% the right foot. The proportions differ much in the different parts of the country

The Normal Foot—With the great majority (about 70%) of the Norwegian army the length of the foot is between 25.5—28.5 cm. In 6,443 men both feet had a total length of 341,651.0 cm. The average length is 26.513 cm. The average height of the same men was 171.1 cm. The proportion between the height and the length of the feet is therefore 6.45. The comparative foot-length, that is in proportion with the height is quite invariable and is 15.5%, for every cm the height increases, the average footlength increases 0.155 cm

With the greatest part of our soldiers the breadth of the foot is between 9.5—10.5 cm. The breadth increases with the height and varies in the different parts of the country, as also the proportion between the length and breadth of the foot varies

Atypical Foot—In each class of soldiers with the same height there are a few whose comparative footlength is not 15.5%, their number is small among men between 160—185 cm high, but if those under 160 or over 185 are examined,

quite striking irregularities will appear. The author ascribes this to the fact that men, who have not at the age of 23 years reached 160 cm or are above 185 cm are abnormal. There is no harmony between the age and height of the individual and this is often connected with irregular development of the different parts of the body. With the small men a well proportioned foot is exceptional. These atypical feet are of great practical interest as it is difficult to procure them a fit in foot-wear

It is more difficult to procure suitable foot-wear for the Norwegian army than for most other armies. Our army consists of farmers, sailors and fishermen. From the want of use the feet of the latter have probably changed their form

The boots of our army must be adapted equally to stony ground, dusty roads and marshes. The author concludes that these investigations have proved—

- 1 That there are several foot-types in Norway
- 2 That our present foot-wear is not suitable
- 3 What foot-wear should be suitable"

THE latest speculation as to the origin of the eternal *kala-azar* is that it may be due to a trypanosome. Surely, however, such a not inconspicuous object in the blood could not have been over-looked by so many workers

WE have received and will notice in next issue that delightful book "*A Naturalist in Indian Seas*," by Major A Alcock, I M S, F R S, LL D, and C I E. We understand that he has another book in the Press dealing with his scientific *wanderjahr* in the Pamirs

THERE has been quite an epidemic lately of special numbers of medical papers, among which we may mention the "Alcohol Number" of the *Practitioner*, the "Lister Number" of the *British Medical Journal*, and the "King's Sanitarium Number" of the *Lancet*

MR MALCOLM MORRIS, for so many years the able Editor of the *Practitioner*, has resigned that post and is succeeded by Dr W Cecil Bosanquet, one of the Joint Editors of Quain's *Dictionary*

NOTES FROM CONTINENTAL EYE CLINICS

VI—SWEDEN

I visited the Royal Hospital of Sweden. A central polyklinik furnishes out-patient rooms for the work of every branch, distributing the appropriate patients to each, thence the in-door admissions are drafted off to their own particular block. The Eye-department is under the

care of Professor Widmark, he has about 4,000 out-patients annually, and a little under 800 operations, half of which are minor procedures performed on out door patients, in the last report senile cataract operations stand at 72, and magnet-extractions of foreign bodies at 45, there are 31 beds, one of which is a paying one, for private patients of the Professor

Cataract—In about 50 per cent of cases, the simple operation is selected, and these yield 4 per cent of admitted prolapse of the iris, which is met with prompt iridectomy. Widmark, whilst admitting the complication to be a serious one, still prefers the simple method if the cataract is mature. In immature cases he keeps to the combined operation, and he operates on not a few of such, on account of the long distances many of the poor people come to him (I saw one case which had come 700 miles). After simple extraction Widmark keeps his patients in bed four or five days, whilst after the combined he only insists on two days quiet, he has twice met with sudden death from syncope in old people whom he had kept recumbent for four days, and he is now averse to keeping such patients lying down longer than is necessary, on account of this danger when they first get up, consequently he prefers the combined method for the old. He has no hesitation in declaring that if he could not immobilise his patients after operation, he would never do the simple operation.

Widmark has had good results from Forster's operation, and sometimes employs it to hasten maturation. For dissection of secondary membranes he uses a single needle or a knife, he reserves Fukala's operation for degrees of myopia too high to permit of the patient doing his work, and *never* operates on more than one eye of the same patient, he has good results from this procedure.

Detachment of the retina—Sub-conjunctival injections of saline solution have not proved satisfactory, rest in bed, bandaging and hypodermics of pilocarpine constitute his treatment.

The most interesting feature of this klinik is the large number of *penetrating injuries of the eye* treated. I found nearly 50 per cent of the beds occupied by such cases, and was told that this is the usual state of affairs. A large number of these injuries are inflicted by pieces of metal, but the majority are due to fragments of stone, and occur in the mining and stone-quarrying industries, on which Sweden so largely depends for prosperity. Sympathetic ophthalmia is rife amongst the up-country miners who are far from highly skilled aid, indeed this disease is stated by Widmark to account for 10 per cent of the total blindness of Sweden, whilst direct injury accounts for another 10 per cent, making in all 20 per cent. For traumatic cataract Widmark makes an extraction in quiet eyes,

expelling the cortex by massage, and by the aid of a curette.

Widmark works with an Azmus' Sideroscope obtained from Heri Sitte, instrument-maker, Breslau, Germany, he finds it much more delicate than Hirschberg's instrument, it is in almost daily use here, and never fails to give an indication of the presence of even the smallest non splinter, whether in the eye or in the orbit. It is so sensitive that Widmark is able to accurately localise the position of the fragment by the deviations obtained when the magnet is approached in turn by the different meridians of the eye. In the case of several meridians yielding maximum deviations, he not infrequently employs the neutralising apparatus attached to this sensitive instrument. A comparison of the 'reduced variations' can then be easily made. Widmark showed me a number of case-notes in which he had thus been able to accurately localise the position of the fragment before operation.

Ulcus serpens is a common result of injury, and Widmark finds that in two such cases out of three the Lachrymal canal is diseased, and so has been indirectly responsible for the complication, he therefore treats the diseased passages vigorously, slitting the canaliculi, dilating any stricture, and freely washing out the canal with a solution of Hyd perchlor 1 in 5,000.

For *traumatic irido-cyclitis* and for *hypopyon ulcer* he gives full doses of salicylate of soda as a routine measure, and is convinced that the drug exerts a most beneficial effect. In early cases he destroys the ulcer edges and floor with Paquelin's cautery, and in later cases he rubs the ulcer with a cotton-wool pencil soaked in solution of Hyd perchlor 1 in 1,000. He also employs atropine, bandages, &c.

For *glaucoma* Widmark prefers iridectomy reserving sclerotomy for cases in which he is doubtful whether any good can come of operation, for simple glaucoma, he keeps to medicinal treatment, but if the tension varies from time to time, and if there is any pain, any appearance of colour rings, and a sinking visual acuity, he performs iridectomy.

Widmark has interested himself in *statistics of blindness* amongst the Scandinavian peoples, he finds that congenital blindness is common in Norway, where continued intermarriage in families is prevalent, glaucoma is also common there. In Finland granular ophthalmia is rife. In Iceland the percentage of blindness is the highest in Europe owing to the paucity of medical men there, the Icelander suffers much from cataract and glaucoma. In those areas of Sweden, from which there is much emigration, the percentage of blind is high, whilst in the immigration-areas it is low, and this, in spite of the fact that the latter being the quarrying districts furnish a large quota of eye injuries, the explanation is to be sought in the fact that

the old and feeble are left behind in the emigration-areas to swell the number of blind, whereas the quarries attract the young and lusty, who, if damaged, probably return home again.

Widmark also demonstrated to me by the aid of his chart-maps the influence that the presence of eye-hospitals in an area of Sweden exercised on the relative blindness of that area, and *vice versa*.

Stockholm, October 5th and 6th, I visited Dr Norderson's Eye Klinik. This is a private hospital with 28 beds. He extracts about 25 cataracts yearly, and rarely performs the simple operation, but in double cases he uses the combined operation on the first eye, and if a good result is secured, tries the simple method for the second eye, provided that all indications are favourable. He would never operate without iridectomy if he could not immobilise his patient after operation. His cataract ward opens directly into the operating room. He reserves a downward section for deeply sunk eyes such as are met with in some of the far northern people.

Before operation he injects the Lachrymal sac with a solution of Hyd oxy-cyanidum to make sure of its potency, he extracts all the lashes of both lids with forceps, which, he says, is not a painful process.

He washes out the conjunctival sac with 1 in 2,000 oxy-cyanide solution, but confesses his scepticism as to asepsis being so obtained. He used to boil all non-cutting instruments, and to dip the knife in boiling water after cleaning away all grease with a mixture of alcohol and ether. He is now trying dry heat at 150°C and thinks it does well and damages cutting instruments little if at all.

For *unripe cataract* he performs preliminary iridectomy.

For *septic keratitis* following extraction, he injects a 1 in 2,000 Hyd oxy-cyanide solution under the lid freely three daily.

He still meets *sympathetic ophthalmia*, but much more rarely since the introduction of antiseptic surgery. He is 60 years old and remembers the pre-antiseptic régime.

For *detachment of retina* his treatment is sub-conjunctival saline injections and rest in bed, he finds them very unsatisfactory cases.

Senile ectropion seems relatively common in Sweden. He uses Sneller's sutures, and if they fail to produce a permanent result, as they often will do, he falls back on Kuhnt's operation.

After *enucleation* he sutures together the internal and external recti, and then draws the conjunctiva over this suture by two or three vertical stitches. He thinks this method (de Wecker's) really gives a better stump.

For *granular ophthalmia* he employs expression and daily applications of 1 in 100 Hyd oxy-cyanide solution painted on with a brush. He finds peritomy a useful operation for pannus.

For *ectropion* he tries Gaillard's sutures first and then, if need be, falls back on a Hotz's operation.

For *glaucoma* he does iridectomy in congestive forms and employs medical treatment in simple cases, he considers that a more accurate classification of the simple form is needed and that the operation is harmful in many cases, he rarely resorts to sclerotomy, with the results of which he is dissatisfied.

For *lachrymal obstruction* he injects Hyd oxy-cyanide solution and dilates the stricture after dividing the canaliculus if necessary, he falls back on extirpation if these means fail, he thinks that this operation is being overdone nowadays.

Upsala, Oct 7th—8th. Visited Upsala and met Professor Alvar Gullstrand, who is building a new eye-klinik and at present has beds in the general wards of the Upsala hospital, where he shares an operating theatre with the surgeons, he has an out-patient attendance of 1,500 annually, and has one permanent assistant.

He leaves Upsala every year for three months and devotes the time to scientific research, his favourite line being the application of mathematics to the study of the optics of the eye. He has invented a number of interesting and ingenious pieces of apparatus for ophthalmological purposes, amongst which may be mentioned a photometer constructed on accurate scientific principles, and a handy form of astigmatometer.

It is characteristic of him that he has refrained from publishing these and other useful appliances till he has been able to give them years of trial.

He considers that there is no evidence in favour of 'compensatory lenticular astigmatism,' and thus explains those cases in which an astigmatism becomes apparent as life proceeds—

(1) The astigmatism is in reality congenital, the vertical meridian being the less convex, but
(2) the pressure of the lids, especially above the cornea, suffices in early life to counteract this astigmatism by increasing the curvature of the vertical meridian,

(3) as life proceeds, the sclerotic becomes more rigid, and the lid muscle less active, hence

(4) we have a manifestation of a previously latent defect.

Gullstrand uses Javal's method of ascertaining the axis of an astigmatism. Placing his patient before a sun-rise diagram, he first corrects any spherical defect, and then by the addition of a +0.5, or +1.0 sphere renders him slightly myopic, the patient at once recognises his clearest line without difficulty.

In high myopia, even up to -8.0 D, Gullstrand gives full spherical correction, and he is convinced that this may be safely done, provided that any astigmatism present has been also accurately corrected. He speaks not only from

17 years of personal experience, but also from having seen many cases, in his klinik, for whom the late Dr Anton Beigh of Stockholm had fully corrected high degrees of myopia decades previously, without any subsequent progress of the disease

Glaucoma simplex—Gullstrand is very chary of operating in these cases, when there is no marked increase of tension, but he thinks that if the anterior chamber is shallowed, the prospect of an iridectomy being of service is distinctly increased

In a case of symblepharon of the lower lid, Gullstrand had divided the tissues at the junction of the skin and mucous membrane, right down to the lower bony margin of the orbit, and had then (following the method of May) inserted an artificial eye over the natural one into the wound thus made and under the upper lid, the artificial eye had been first covered both back and front with a large Thiersch's graft, folded over its lower edge, so that the raw surface of the graft looked away from the glass eye, the latter served as a splint to keep in position the graft, the two raw surfaces of which then came in contact respectively with the denuded sclerotic of the eyeball, and with the raw surface of the separated lower lid. The lids were sutured over the artificial eye for five days, when the eye was opened, and the artificial eye removed cleaned and replaced, to be again taken out for cleansing every 24 hours. I saw the case one month after operation, and the restored fornix looked excellent, nor had the cornea suffered perceptibly from contact with the improvised splint

Cataract—Gullstrand, after trying both methods, finds the combined operation safer than the simple. After delivery of the lens he removes any cortex by pressing below on the limbus with a curette, whilst he makes counter-pressure on the eyeball above the incision by means of a finger on the upper lid. He is, however, most cautious, and prefers to leave cortex behind rather than to risk an escape of vitreous by over-prolonged efforts to clear the chamber

Lachrymal obstruction—Gullstrand finds no difficulty in keeping his cases under prolonged observation, and there are very few obstructions which he fails to get a probe through, he begins with a very small probe and works upwards, once the smallest sound enters, full dilatation is only a matter of time, he does not consider a fistula a contra-indication to cure by probes, even when it remains after full dilatation. He thinks that extirpation of the sac is an operation which is seldom called for under the conditions of his practice

He boils all instruments but acknowledges that he finds boiling bad for the edges of his knives

R. H. ELLIOT, F.R.C.S., CAPT., I.M.S.

Review

Malaria in India—(No 2 of Scientific Memoirs of Officers of the Medical and Sanitary Departments of the Government of India) By CAPTAIN S P JAMES, M.B. (Lond), I.M.S., on special duty with the Royal Society's Malaria Commission Calcutta, Superintendent of Government Printing, India, 1902 Price, Re 1-8

THE Sanitary Commissioner with the Government of India is to be congratulated on the new departure in the method of publishing the scientific memoirs, and we strongly approve of the alteration in the title

The present volume is the second of the new series, and is one of great importance and value. It is well known that Captain S P James, I.M.S., has been at work along with Drs Stephens and Christophers, of the Royal Society's Commission on Malaria, on the many problems of malaria in India. The present memoir is an outcome of this work, but as it was sent to press before the author had seen the reports of Drs Stephens and Christophers, it represents his own views and opinions mainly. The first 26 pages are devoted to "methods of investigation," in which are described the methods used for examination of the blood, of the malaria parasite in mosquitoes, the methods for investigation of malaria in hospitals, jails, and among the general population, and finally methods for the study of mosquitoes

The author points out that there are three means of obtaining diagnostic evidence of malarial infection, viz—(a) detection of the malarial parasites, (b) detection of malarial pigment in the leucocytes, (c) detection of a change in the proportion of the large mononuclear leucocytes, the last two methods are of special value where the administration of quinine has driven the parasites from the peripheral circulation, this subject Captain James has dealt with in our January number. At page 15 of this volume the writer strongly inveighs against the universal practice of giving quinine to all fever cases at once on their admission to hospital, for in such cases it is quite impossible to definitely exclude the diagnosis of malaria. It is obvious that until the plan of not beginning quinine treatment till an accurate diagnosis has been made is adopted, no great progress is possible in the differentiation of the continued fevers of India

One of the most important as well as original chapters in this book is that on the nature of the infection in native children. It has always seemed to us to be a strange and remarkable thing that while Stephens, Christophers, and Professor Koch all described malarial infection in children, they added that the children were not ill. Now, if there is any fact well known in India, it is the liability of children to malarial fever, and indeed the statistics of the general population support

this statement, no less than 3,63,000 children under ten years of age having their deaths in the Punjab alone in one year ascribed to malarial fever. Now Dr Stephens and Christophers had stated (Reports, 3rd Series), that, in speaking of malaria in children they meant the presence of parasites, "the children are perfectly well." This point was specially investigated by Captain James who shows that if the children are seen *in the evening*, it will often be found that they are ill or suffering from fever. Therefore, there is no essential difference between child infections and those occurring in adults, and a statement that native children may harbour the parasite in abundance and yet be free of fever is wrong and misleading. We direct especial attention to the chapter on the relation between enlarged spleens and malarial infection, and we may briefly summarise the author's conclusions—(1) a high endemic index in India is always accompanied by a high (usually higher) spleen rate, (2) a high spleen rate may exist in adults *and in children* without a corresponding parasite infection. These are either (a) chronic cases in which the parasites have gradually died out, but which are liable to again become infected, or (b) cases which from repeated infection have become immune to new infections with the parasite, but in which the spleen has not yet had time to diminish in size, (3) the spleen rate in adults is no indication of the prevalence of malaria, in places which are very malarious it may be low, and in places only slightly malarious it may be high, *e.g.*, in Calcutta. (4) Bearing in mind that the spleen is comparatively slow to enlarge and diminish in size, the spleen rate is entirely influenced by the parasite rate.

There are many other chapters in this valuable book which we would gladly linger upon, but space forbids. We must, however, refer to the question of *blackwater fever* in India. As has long been known, cases are not uncommon in the Deccan, in a fortnight spent there Dr Stephens saw two cases and heard of a third (apparently among Europeans), and it is understood that Stephens and Christophers still stick to the view expressed by them as a result of their African experience that (1) there is no evidence of a special blackwater fever parasite, and that this fever can rarely, if ever, occur except in a person who is suffering from, or has recently suffered from, a malarial attack, and (2) quinine is, in the great majority of cases, the immediate cause of the blackwater. It is to be regretted that neither Captain James nor his colleagues on the Malaria Commission have discussed the very obvious objections to this quinine theory of blackwater.

We have omitted reference to many portions of this valuable book, notably to those chapters dealing with mosquitoes and the important question of *species* of anophelids and malarial infection, but we can only refer our readers to the book itself.

The price of the book is only Rs 1-8, so that it should be in the hands of every practitioner in India. The price of the book might well have been much higher, but it is a wise policy of the Sanitary Commissioner with the Government of India to have such books issued at a price which makes them available to all grades of medical men in India.

We heartily congratulate Captain James on the production of this extremely valuable monograph on Indian Malaria. It is no figure of speech to say that the book should be in the hands of every medical man in India, and it should be read, marked, learned and inwardly digested by them.

The new series of scientific memoirs promises well, and we congratulate the Sanitary Commissioner on them and will look forward to the next volumes in the series.

The Diseases of Warm Climates—By Dr B. SCHEUBE, translated by PAULINE FALCKE, and edited by JAMES CANTLIE, M.B., F.R.C.S. (Second Revised Edition) Price 30s London, 1903 Bale, Sons and Danielson, Ltd.

WE heartily welcome this valuable addition to the library of tropical medicine. We have long known Dr Scheube's work in German and have often wished to see it translated into English. This had now been very admirably done, and a volume of 600 pages is the result. The book is well printed on thin paper and consequently is by no means bulky. The contents of the volume are thus divided—Part I deals with general infectious diseases from plague to pox, Part II with diseases caused by intoxication, *i.e.*, pellagra, lathyrism, &c, Part III with diseases caused by animal parasites, Part IV is devoted to "organic diseases" as spina, tropical dysentery, sleeping sickness, hepatitis, running amok and lath, The fifth part describes the cutaneous and local diseases from prickly-heat to anthrax, and the last section of the book deals with the "cosmopolitan diseases of the tropics," *i.e.*, the degree of prevalence in the tropics of the ordinary universal diseases of mankind, *e.g.*, typhoid, rheumatic fever, measles, scarlatina, mumps, &c, a subject of great interest, and one which will no doubt one day see a volume entirely devoted to it.

A word must be said for the illustrations, which are many and valuable, the seven original plates from the German edition are reproduced, and in addition a dozen from the pages of our youthful contemporary, the *Journal of Tropical Medicine*. In addition to these there are numerous illustrations appearing in the text, nor must we forget (as the compilers of the table of contents appear to have done), the five instructive coloured maps of the world showing the worldwide distribution of blackwater fever, beri-beri, leprosy, anchylostomiasis and filariasis. Other features of the volume are the synonyms.

of each disease, given in many languages and native vernaculars, and the complete and admirable bibliography at the end of the chapters on each disease.

By a liberal use of smaller print space is given for discussion of less important or more controversial parts of each subject.

What strikes the reader in reading this book or even in turning over the pages thereof, is the wonderful way in which Scheube has made use of the literature of all nations in writing his chapter. Not only are all German and French authorities quoted where necessary, but our author displays a unique and extensive knowledge of the literature of tropical disease in English, and medical men in India who have written on tropical diseases within the past ten years will find their names frequently quoted in these pages. We may mention a few names of medical men who have worked in India which we noted in reading the volume: Childe, Surveyor, Choksy, J. N. Cook, F. G. Clemow, Haffkine, Hankin, Dimmock, C. R. M. Green, Leumann, in the chapter on Plague, Fayrer and O'Connell, Raye on Dengue, W. J. Buchanan, O'Connell, Crombie, Evans, Fayrer, James, K. Macleod, R. R. H. Moore, A. Powell, L. Rogers, R. Ross, C. E. B. Seal, L. T. Young and M. T. Yari, on Malarial Fevers, &c., V. Carter, G. Bomford, Joshua Duke, W. K. Hatch, A. Barkley, Lewis and Cunningham, Maitland, A. Mitia, F. J. Mouat, A. and E. F. Neve, on Leprosy. Then, too, in the chapter on "Diseases caused by Animal Parasites" the work of J. F. MacConnell, R. H. Charles, Vincent Harington, H. Innes and G. Lamb, is recorded as well as the better known work of Giles, E. Dobson, L. Rogers and J. Maitland.

We have mentioned the above names to show the thorough way in which Dr. Scheube has searched the literature of tropical medicine to write his book. It is characteristically Teutonic in its thoroughness.

The opinions expressed are generally sound, and debated questions are fully discussed, so that on the whole we can confidently recommend this volume as the best, most complete and most original treatise on tropical medicine that has yet seen the light. It is well illustrated and in every way will prove itself indispensable to the medical man in the tropics. We congratulate the editor on its successful production in English.

A Manual of Surgery for Students and Practitioners—By WILLIAM ROSE and ALBERT CARELESS. Fifth Edition, 1902. Baillière, Tindall & Cox, pp. XV and 1213. 39 plates, 420 illustrations. Demy 8vo. Price, 21s net.

THE phenomenal success of Rose and Careless' *Manual of Surgery* renders the task of the reviewer an easy one. A book needs little further recommendation when, between May 1898 and August 1902, it runs through five

editions, and this, the fifth edition, follows on the fourth within twelve months.

Nevertheless such is the progress of modern Surgery that considerable modifications have been necessary to bring this edition up to date and to fit it more satisfactorily to modern requirements. The authors say "that it seemed undesirable to perpetuate any longer the idea that the first and most important element in surgical practice is a knowledge of inflammation and its treatment, and hence this subject has been removed from its original position and has been located to one secondary to that occupied by Bacteriology and the principles of Antiseptic and Aseptic Surgery"—a decision which is certainly to be approved.

The first chapter therefore is devoted to surgical bacteriology, sepsis and infection, antiseptics and asepsis. As regards asepsis our authors freely admit that its methods have much to commend them, but they require much more attention to details than does the antiseptic method, and there is consequently a greater risk of failure, but they freely admit that, though they follow their colleague, Lord Lister, all antiseptics are more or less irritating, but "when one's work lies in a large city hospital, with impure and often contaminated air around, we believe that the welfare of our patients is best consulted by employing antiseptic dressings, and the results we have obtained with the double cyanide gauze are such that we can wish for nothing better."

It is not necessary to review at length the contents of this volume, but we happened to open the chapter on appendicitis, which is a very good one. In it we find the following opinion italicised—"Personally we are distinctly in favour of early operation, and the general rule (to which, of course, there are exceptions), which we would suggest as justifiable, is that *if in spite of suitable rest and medical treatment the symptoms, both general and local, are not commencing to abate at the end of 48 hours, operation should be undertaken*." The whole account of this protean disease is good and worthy of study.

In the chapter on liver abscess we note that the advice is sound, "experience proves that the usual law of treating suppuration ought to be strictly obeyed, viz., that the abscess should be opened and drained." The chapter on hernia is good, all operations of importance are mentioned, and a full description of Bassini's radical operation is given. In the chapter on stone, lithotomy is given its proper place before lateral lithotomy and the suprapubic operation.

At the end of the volume is a small print chapter on amputations, well illustrated, and the volume concludes with a chapter on anaesthesia.

The volume is altogether admirable and may be strongly commended to students and to practitioners. We would recommend the publishers,

when the inevitable sixth edition is due, to increase the size of the page, and not to increase its thickness, as it is the 1,200 pages form a very thick volume, which cannot be conveniently made more bulky.

The work of the publishers is excellent, the letterpress and the illustrations are clear and good. The price of the book, 21 shillings, should render it one of the most popular books on modern surgery.

Hand-book of Practical Anatomy—By Assistant-Surgeon JYOTISH CHANDRA MUSTAFI, Teacher of Anatomy, Campbell Medical School Vol I, Hare Press, Calcutta, 1902

THIS is an admirable little book intended for senior and junior students of anatomy in our Indian Medical Schools. The order of dissection recommended is that followed in the Anatomy Department of the Calcutta Medical School, and in the Campbell Medical School, Sealdah.

A small book of 156 pages cannot possibly be expected to be a complete treatise on human anatomy, but we believe it affords sufficient detail to make a good foundation for a fuller study of this important subject. The little volume is dedicated to Dr Havelock Charles, I.M.S., of the Medical College Calcutta, who has done so much to improve the study of anatomy in India.

We congratulate the author on its production, and have no doubt that it will prove of great value not only to the student but to the Hospital Assistant who is reading for his promotion examinations.

Current Literature.

MEDICO MILITARY TACTICS

We quote the following article by Dr Johann Steiner translated in the August issue of the *Journal of the American Military Surgeons*, as it will be of interest to our readers in Military employ—

"One of the youngest branches of military medical science is tactics in the sanitary service, for short called merely *tactical sanitary service*.

Long ago it was recognized that the thorough medical training of military surgeons did not suffice alone to meet the demands made on the sanitary service in war. That could be done only if the *organization and direction* of the sanitary service were adapted to the military requirements.

From that, there followed as a matter of course the necessity of military and tactical training for military surgeons. But the suggestions with regard to this matter which were made in the seventies of the last century in Germany (by the then Lieutenant-Colonel, afterwards General and War Minister Verdy du Vernois) and in Austria Hungary (by the Major of General Staff Bilimek) met with no response, although William Roth, the well known Surgeon General in his '*Jahresberichte ueber die Leistungen und Fortschritte auf dem Gebiete des Militaer Sanitaetswesens*' (Annual Reports on Achievements and Progress in the Department of Military Sanitary Service) also took up their cause.

Not till the middle of the nineties did people begin to take the matter up again and officers of the Austrian Hungarian General Staff are entitled to the credit of having written the first publications on the subject. They were followed by some Austro Hungarian military surgeons, then by military surgeons of the German Army, and later by Frenchmen and representatives of other European armies.

By *tactical sanitary science* we understand the science of the use of the sanitary establishments on the *field of battle*—the science of the application of all the available sanitary means and establishments at the *seat of war* must, in conformity with the sense, be designated *strategical sanitary service*.

There are two methods of training and perfecting in tactical sanitary service, namely, by means of the map and in the field itself, the former prepares for the latter, and must serve as a makeshift, as field exercises require time, and besides it is necessary to have different kinds of ground.

Theory here is just as indispensable as in every other branch of science, but the chief thing is practical exercises with the aid of special examples, this is the so-called '*applicatory*' method of the study of field service, as carried out by the officers of all branches of the service.

During the last few years this method has been diligently practised by the medical officers of the European armies. The means employed are written tactical exercises, sanitary '*Krieg spiele*' (war games), mounted sanitary tactical excursions, and participation in the journeys of the general staff.

In this way the army surgeon should train himself under given military and local conditions to dispose the sanitary establishments at his disposal to the best advantage.

At first smaller problems are taken, and then progressively greater and greater ones, e.g., A detachment, consisting of several battalions of infantry, a squadron of cavalry, and a battery of artillery occupies a camp, makes a march, and has an engagement. Then the principal medical officer of that detachment has in the council according to the military conduct assigned to him, and in accordance with the verbal orders of the military commander in chief, in strictly chronological order and by word of mouth to state what are his decisions measures, reports, etc. This is in a similar way required of the chief surgeons of divisions, army corps, and armies, and of the commanders of bearer companies (ambulances), field hospitals, etc.

Wise y enough, in order to make these sanitary tactical exercises approach real war as nearly as possible, they have been based on episodes and phases from military history.

Thus the author of this paper has made the battle of Custoza 1866* and the operations of the Austrians in South Tyrol (1866)† the bases of sanitary tactical problems.

It is necessary for the military surgeon to work out as many such lessons as possible under the most different circumstances, in order to obtain practice in adapting the sanitary service to the given military situation as well as possible. To that end it is necessary for the army surgeon to acquire a knowledge of the fundamental principles of reading maps, tactics, the effect of different weapons, transportation, etc. Nowadays these are indispensable aids for the military surgeon, who, indeed, is not only a medical man but also a soldier.

By means of this knowledge the military doctor gets nearer to the officers of the combatant troops, he increases his military standing with and his influence over the soldiers, which in the end enhances his medical authority.

In the Austro-Hungarian Army in every large garrison, where several military surgeons are stationed, during the winter months under the guidance of a general (or higher staff officer and the principal medical officer '*Sanitaets Kriegs spiele*' (sanitary war games) take place, at which persons taking part have to solve a greater or less problem according to their position. As far as possible in summer tactical applicatory discussions are held in the field.

At the examination for staff surgeon (major) the solution of such applicatory problems within the sphere of the chief surgeon of division and army corps is required. Whoever wishes to attain the rank of a medical general must have taken part in a practice march of the general staff in which the work of a chief army surgeon is involved.

The fundamental principles of these military tasks are taught the young military surgeons at the '*Military Medical Applicatory School*' in Vienna.

Sanitary tactics are cultivated in a similar manner also in Germany and Switzerland, as well as in France in which last country a military surgeon of high rank teaches tactical sanitary service at the military academy.

Sanitary tactics will become of increased importance for American military surgeons, now that the United States has inaugurated a world power policy, and since it appears not impossible that one day the American Army will have to take part in a great war carried on according to the modern rules of tactics and strategy.

In conclusion I will call attention to some of the most important publications on the subject of sanitary tactics‡.

The applicatory methods are best explained in the writings of Colonel Hausenblas, *Der Sanitaetsdienst bei einer Infanterie Truppen Division im Felde* (Sanitary Service in the field with an Infantry Division) Vienna, 1896, which was the first work of the kind, then the extensive work of Colonel Kusmanek and Captain Von Hoon, *Der Sanitaetsdienst im Kriege* (The Sanitary

* Der Sanitaetsdienst bei der Reserve Division von Rupprecht in der Schlacht bei Custoza 1866. (The Sanitary Service with the Division Von Rupprecht in the Battle of Custoza, 1866) Vienna. Saffar 1898.

† Applicatorische Aufgaben aus dem Sanitaetsdienst im Gebirgskriege, (Applicatory Lessons on Sanitary Service in Mountain Warfare) Vienna. Saffar 1899.

‡ In this connection the valuable paper of Colonel Woodhull on Military Medical Problems (*Proc Ann Mil Surg U S*, Vol. vii, 1897), should be considered.—Editor.

Service in War) Vienna, 1897 and the *Aufgaben Sammlung zum applicatorischen Studium des Feld Sanitätsdienstes* (Lessons on the Applicatory Study of the Sanitary Service in the Field) Vienna, Saffar, 1901, by Staff Surgeon Cron and the author of this paper.

Staff Surgeon (Major) Cron of Vienna is one of the most zealous champions of sanitary tactical study. In his excellent book *Beziehungen des Feld Sanitätsdienstes zum Felddienste* (Relations between Sanitary Service in the Field and Military Tactics) Vienna, Saffar, 1902, he makes the first attempt to systematize sanitary tactics, and a successful one too. In his *Zehn Beispiele aus dem Gebiete des Gefechts Sanitätsdienstes* (Ten Examples of Sanitary Service in Battle), Vienna, Saffar, 1902 Staff Surgeon Cron shows even to the smallest detail how sanitary service in the field has to be carried out.

In Germany sanitary tactics are represented by Lieutenant-Colonel von Oven's *Taktische Ausbildung der Sanitäts-officiere* (Tactical Instruction of Military Medical Officers), 2nd edition, Berlin, 1901, by Loeffler's *Taktik des Truppen Sanitätsdienstes auf dem Schlachtfelde* (Tactics in Sanitary Service on the Battlefield), Berlin, 1899, and most recently by the excellent work of Chief Staff Surgeon Dantwiz *Ueber sanitäts taktische Ausbildung der Sanitäts-officiere der Armee* (Instruction in Sanitary Tactics for Army Medical Officers), Berlin, 1901.

One of the very first to treat of sanitary tactical subjects was Colonel Bircher of the Swiss Army Medical Corps in his *Neue Untersuchungen ueber die Wirkung der Handfeuerwaaffen* (New investigations on the effect of Fire Arms) Aarau, 1897.

Among the French the first to be mentioned is Chief Staff Surgeon Bénéch with his book *Le Service de Santé en campagne* (Sanitary Service in the Field), Paris, 1902.

Thus we see that the officers of the general staffs and the military surgeons in all large armies are devoting much attention to sanitary tactics, and there is no doubt that in a future war the knowledge of this subject will bear rich fruit for the benefit of the sick and wounded defenders of their country.

SPECIAL SENSES

Paraffin Injections—The use of paraffin for injection in facial and other deformities was introduced by Gersuny early in 1900 and has rapidly come into favour. Papers have recently appeared by Walker Downie of Glasgow and Baratoux (*British Medical Journal*). These surgeons have chiefly used it for removal of nasal deformities such as sunken bridge, badly united fractures &c. Broeckert has also used it in ophthalmic surgery (*Recueil d'ophtalmologie*, October 1902, p. 624). The following points require attending to in its use. The paraffin should be homogeneous, hard and crystalline, of melting point, not less than 110°. At first it was used of melting point 103°, but this is not high enough, and in this country 110° or higher should be used. It must be sterilized by heating to its boiling point which is about 150°C. The skin must be carefully sterilized. No anaesthesia is required though in the young and nervous it is advisable. Downie paints a band of collodion across the nose at the level of the eyes and continues it down on each side of the nose, following the line of junction between the nose and the cheek. As this dries it contracts and helps to prevent the paraffin from passing into the cellular tissue of the eyelids. A 10cc glass syringe with a short strong needle is required and must be sterile. The syringe previously warmed in hot water is filled with the melted clean paraffin. The main difficulty is to inject the paraffin before it has set in the needle. To prevent this Downie wraps the proximal half of the needle and its collar with cotton thread and thin platinum wire the two ends of which are connected with a battery. The paraffin should be injected continuously, 2 or 3cc being usually enough, the nose moulded by the fingers of the other hand. Before withdrawing the needle a stream of cold water should fill on it and on the nose. In this way the paraffin sets and the needle is withdrawn without leaving any paraffin in its track or any escaping afterwards. It has been found that the paraffin makes its way along the lines of the subcutaneous connective tissue trabeculae between the fat containing cells and that at the end of six months it remains intact and has undergone no change. I have injected it in the saddle-backed nose of a patient suffering from congenital syphilis and have been quite satisfied with the result as has the patient. I have also used it as an artificial vitreous in a Mule's operation instead of a glass globe, simply

pouring it into the scleral cup and then sewing that up when set. The result was very satisfactory, and the reaction markedly less than it is after the use of a glass or metal globe.

Strabismus—The reaction in America to day against operation for squint is very marked and what almost might be described as the 'mania' for operating for minor degrees of strabismus has subsided. Indeed the pendulum has swung the other way now, and because the impossibility of making a perfect adjustment of the muscles by operation is recognised some American surgeons would abolish such operations altogether. The true course lies between, no doubt, and it would be as foolish to operate for minor degrees of heterophoria—as has been done of recent years—as it would to refuse to operate on marked cases that have been neglected or failed to improve under treatment. What we have to be thankful for is the great impetus given recently to the practice of monocular gymnastic as our American cousins call it. By throwing the good eye temporarily out of use and exercising the weaker eye until its functioning power improves, we can re-establish muscular co-ordination in the majority of cases and in many true binocular vision. (See instructive papers by Jackson and Gould in the *Journal of the American Medical Association*, November 1902.)

Treatment of serpiginous ulcer of cornea—Kipp, in the *Journal of the American Medical Association*, 9th August 1902, calls attention to an appearance met with in cases where extension of the ulcer has ceased. It consists of lines diverging from the margin of the ulcer in the deeper layers of the cornea. They do not branch but are connected at their further ends by greyish intermediate striae at right angles. They resemble a spider's web. The important point is that in cases where these lines are present active treatment is no longer necessary and any treatment involving further destruction of tissue is out of place. Gentle massage with weak yellow oxide of mercury ointment is all that is necessary. Kipp cauterises the ulcer when these lines are not present with the galvanic cautery after mapping out its limits with fluorescin. Neillhagen believes that cauterisation and other active treatment is only necessary when the pneumococcus is present. Connor recommends acetozone solution (in 10,000). I have tried it in 1 in 5,000 solution with good results. It is capable of destroying the gonococcus in a few seconds even in a 1 in 10,000 solution (Novey) and is quite unirritating to the eye.

Tuberculosis of the Larynx—Too much and too little are claimed for therapeutic methods in laryngeal tuberculosis. The disease can only be eradicated in a relatively few favourable cases, but for the latter even lasting cures may often be obtained, and in a larger proportion the disease can be arrested for a time at any rate.

In opening a recent discussion on the local treatment of this affection Middlemas Hunt admitted that all the bright hopes with which the writings of Krause and Hyring inspired us have not been realised, nevertheless "it is no exaggeration to say that thousands of lives have been prolonged and an incalculable amount of suffering averted as a result of the work which has been done in this field."* Palliative treatment, consisting of antiseptic and local anæsthetic applications, are alone desirable whenever there is extensive ulceration or infiltration, especially with much œdema or perichondritis particularly if associated with high fever, loss of appetite, and advancing lung disease. But when ulceration is present, is superficial and not too extensive, in cases otherwise suitable, the application of strong lactic acid, varying in strength from 50 per cent to the undiluted acid, should be well rubbed into the ulcerated surface once a week or a fortnight, if this strength of acid cannot be tolerated, it may be employed in weaker solutions of 10 to 30

per cent Deep granulating ulcers of limited extent heal more rapidly when thorough curettement is done before the acid is applied Barclay Baron urged the use of inhalations of benzoin, creasote, menthol, &c, or intratracheal injections of guaiacol and menthol, but deprecated resorting to submucous injections Lake has obtained good results in some cases of localised deposit by excision with cutting forceps prior to applications of lactic acid Watson Williams emphasised the positive value of submucous injections of guaiacol in almond oil, biniodide of mercury in aqueous solution, and other germicides, where there was no ulceration, and where therefore it was undesirable to create an ulcerating surface By such measures he had obtained lasting arrest of the laryngeal disease in several cases, although curettement and the local application of lactic acid of full strength still holds the first place in the radical treatment of laryngeal tuberculosis in the practice of the great majority of laryngologists

Orthoform is proving a great rival to cocaine as a local anæsthetic in this disease Sendziak finds that it is really an excellent drug, which applied either in the form of powder or in connection with menthol (Freudenthal Menthol, 10 to 50 100 to 150, ol amygd dulc, 300, vitelli ovorum, 250, orthoform, 120, aq dest qs ad 1000 fiat emulsio), by means of brushings or laryngeal syringes, produces anæsthesia and relief from pain, lasting usually a couple of hours, and at times as long as twenty four hours Sendziak has not only noticed an analgesic action in cases treated with orthoform, but also a favourable action upon the tuberculous lesions themselves so that he regards "this drug as a very precious acquisition in the local therapy of laryngeal tuberculosis" Similar encomiums on the beneficial effect of orthoform were expressed by McCall, especially when the drug was associated with resorcin This combination, in proportions varying from one third to two thirds, applied every second day, had given him excellent results in cases with ulceration and exuberant granulations, such cases as are usually cured by flat superficial ulcerations, such as occur in the epiglottis for instance orthoform, combined with bismuth, morphine or cocaine, answers better in his experience —(P Watson Williams in the *Bristol Medico-Chirurgical Journal*, December 1901)

F P MAYNARD, F.R.C.S

FOREIGN EXTRACTS

Which is the best method of administering Quinine?—As the result of his experiments F Kleine concludes that the subcutaneous injection of a sulphate of quinine is the best way of administering the drug, as only a very small quantity is excreted, and only after a considerable time He found that of the quantity administered by the mouth 21% is excreted when a sulphate is used, while 25–38% of a hydrochlorate is excreted Of the quantity administered by the rectum only 17% is absorbed He notes that—as most of us are aware—the disagreeable symptoms or emetichonism are absent when the drug is administered subcutaneously [*Zeitschr f Hygiene u Infektions Kr*, 38 Bd, H 3]

A new Symptom of Cancer—Leser calls attention to the fact that in 49 out of 50 cases of cancer he found *small angiomas of the skin* These angiomas vary in size from that of a pin's head to that of a small pea, they are of a purple hue and tend to be elevated above the general skin level When such angiomas are found in considerable numbers at a comparatively early age, they constitute—in Leser's opinion—an important diagnostic sign [*Muenchener Med Woch* 51 of 1901]

A Test-paper for Iodine, for Clinical use—Danigès and Sabrazès of Bordeaux have devised the following method of preparing an Iodine test paper

which possesses the advantages of being constant, and unaffected by light—unlike Bourget's test-paper—Dissolve one gramme of starch in 10 cc cold distilled water in a porcelain dish, to the solution add 40 cc boiling water, stirring well the while, bring the mixture to boiling point, and let it boil for 1–2 minutes, constantly stirring it When the mixture is cooled down, add half a gramme of sodium nitrate, stir well till the salt is dissolved, then paint a layer of this nitre starch on either side of a sheet of thick writing-paper, taking care that the one side is thoroughly dried, before the other side receives its coating As soon as both sides have been painted and dried, cut the paper up into strips of 1 cm x 8 cm and store in a bottle or other receptacle When one wishes to test a fluid for Iodine, all that one has to do is to wet a strip of the test paper with the fluid, and then add one drop of sulphuric acid dilute 1 in 10 by volume The characteristic Iodine starch reaction is obtained thus when only a thousandth part of a milligramme is present in a drop of the fluid [*Muenchener Med Woch*, 51 of 1901]

A Flesh-test of the Functions of the Alimentary Canal—Schmidt of Bonn has made use of the following test to determine whether it be the stomach or the small intestine which is at fault in any given case of disordered digestion The patient is given, in the evening, 100 grammes of raw, well-minced, beef steak, salted to taste, and the first two stools which he passes after this are examined by means of a Boas' sieve, by which method an entire stool may be thoroughly examined in five minutes It is the residue which is left in the sieve, to which attention is paid should this consist mainly of *connective tissue*, it is evident that we have to do with a disordered *gastric* function, on the other hand, where *muscular fibre* forms the greater part of the residue the fault lies in the small intestine, and we have in all probability to deal with a chronic intestinal catarrh [*Muenchener Med Woch*, 51 of 1901]

The Quinine-prophylaxis of Malaria.—Ruge, in his recently published "Einführung in das Studium der Malaria-krankheiten," has expressed the opinion that of all methods of malaria prophylaxis by means of quinine the only practicable one is that of Koch and Schroeder—the administration of 1½ gramme in a hydrochloric acid solution on every seventh day, and one gramme every eighth day, the dose being taken while fasting

In the *Archiv F Schiffs- u Tropen Hygiene*, Dec 1901, Albert Plehn combats this doctrine He refers to the fact that he was the first to employ larger doses than those usually given as a prophylactic—having in 1898, used one gramme of quinine every seventh day, and in 1895 reduced the dose to half gramme every fifth day, seeing that in Kamerun the one gramme every seventh day did not act efficiently He points out that "he who has, on an empty stomach taken 1½ gramme of quinine in a hydrochloric acid solution, has his joy in life to a great extent, and his appetite entirely ruined for the day—even if, in the end, his digestive organs become accustomed to this method of treatment" He recommends that the prophylactic dose should be taken at bed time by all, save the few whose power to sleep is disturbed by quinine

How to avoid complications in cases of Appendicitis—Ochsner of Chicago, who has operated on 620 cases of appendicitis in 3½ years, has found that the best method of avoiding complications is to suppress all nourishment *per os*, and to wash out the stomach from time to time When a case is thus treated vomiting is relieved, and as the small intestines peristalsis is checked, the disease is localised, and thus more easily dealt with when the abdomen is opened [*Muenchener Med Woch*, No 8 of 1902]

A mistaken diagnosis by means of the Gruber-Widal reaction—Lommel, assistant in Stintzing's clinique at Zena, relates a case of puerperal sepsis, in which the Gruber-Widal typhoid reaction was

obtained *within ten minutes* with a 1-80 dilution, and sounds a note of warning against the use of weaker dilutions. That this case was not one of typhoid fever was evident from the appearances observed at the autopsy [*Ibid*].

The cause of death in strangulation of the small intestine—Albeck has investigated 51 cases of strangulation of the small intestine, and carried out experiments on animals, with the result that he finds that, in the strangulated portion of intestine, there are formed poisonous substances which easily pass out through the intestinal wall, and are absorbed by the patient with a fatal result. These substances are soluble in water, pass through a Chamberland filter, and are unaffected by boiling [*Arch F Klin Chirurgie*, 68 Bd, Heft III].

The Biological reactions of Human milk—Moro and Hamburger have found that when human milk is injected into an animal, we get from that animal a serum which has the property of precipitating the albuminoids of human milk, but not of any other milk. The same is found to be the case when goat's or cow's milk is used, i.e., the resulting serum precipitates the albuminoid of goat's or cow's milk as the case may be, and of no other milk. This indicates that the albuminoids vary in the different milks. They have also found that when a drop of human milk is added to hydrocele fluid, the fluid at once coagulates into a solid mass. This phenomenon is not observed if cow's or goat's milk be used instead of human milk. They explained the phenomenon by assuring that in human milk there exists a fibrin ferment, which is absent in cow's and goat's milk. The hydrocele fluid is also coagulated, but to a less degree, by the addition of human serum, and also in a still less degree by the addition of boiled human milk. This latter fact appears to negative the fibrin ferment theory [*Wiener Klin Woch*, No 50 of 1902].

Koch on prophylaxis and treatment of Malaria—In the *Deutsche Medicinische Wochenschrift*, No. 50 of 1900, Koch gives the resumé of his reports of the transactions of the Yunnan Malarial Commission. He is of opinion that quinine is the drug and that it is only where quinine is ill borne that methylene-blue should be tried. The Hydrochlorate of Quinine is the salt which he prefers, and he considers that a solution of this salt is of most service, a lump of sugar being taken immediately after the dose, to correct the unpleasant taste.

Rightly he protests against the use of quinine pills, which in a few days become absolutely insoluble, [Hospital Assistants please note!] and he has not much faith in the administration of the dose of the dry salt in a cigarette paper, preferring "Oblates," which we know under the name of cachets. The daily dose should be $1\frac{1}{2}$ grain for each year of a child's life, and at least 15 grains for adults. For obviating relapses after the attack is cured, he believes that the most successful plan is to give a dose every eighth and ninth day—i.e., the patient takes quinine for two days and then receives none for seven days. His remarks regarding Blackwater fever are not so strongly against quinine, as those formerly reported.

The Pupillary signs in Pneumonia—Sighicelli has noted the condition of the pupils in 100 cases of pneumonia treated in the *ospedale maggiore* at Milan, and finds that mydriasis is usually present in both eyes, being more marked in the pupil of the side affected. The mydriasis is due, in his opinion, to the presence in the blood of the pneumonia antitoxin, and to irritation, of the vagus—due to the presence of the pneumonic area in the affected lung which irritation is propagated to the sympathetic, the pupil dilator nerve.

Should there be no mydriasis present, this indicates either an insufficient production of antitoxin, or a diminished sensibility of the vagus, and in either case the prognosis is graver than when mydriasis is present [*Clinica Medica Italiana*, 1900].

Atropia in Asthma—For the attack V Noorden injects subcutaneously a small dose of the sulphate of atropia. This cuts short the attack in a well marked manner, the increasing relief afforded, as more and more of the atropia is absorbed, being very striking [*Private communication*].

Sulphocarbolate of Zinc in Purulent Cystitis—Scaresella and Suppo having treated a number of cases of purulent cystitis by irrigating the bladder with a 2% solution of zinc sulphocarbolate, recommend that even in cases which have resisted other forms of treatment this method should be given a trial [*La Riforma Medica*, Nos 275, 276].

Adenoids as a factor in eye affections—Arslan reports that in 16 cases he has established a connection between the existence of inflammation of the tissues of the eye and its appendages, and the presence of adenoids in the naso-pharynx. These cases resisted all treatment, until the adenoids were removed, and then treated healed [*Archivio Ital di Otolgia*, IX 4].

Forcippresure as a Hæmostatic—Wintermity, 1st assistant in Doderlein's Clinic, reports that, from a consideration of 150 operations performed in the clinic, in which angiotripsy by Doyen's, Tuffier's or V. Bismuth's forceps was employed to arrest bleeding—he is unable to recommend forcippresure as a substitute for ligature of bleeding vessels, as it is not a certain hæmostatic [*Munchener Med Woch* 51 of 1900].

Yet another Aphrodisiac—Of late several articles have appeared in the German medical press (among others in the *Wiener Klinische Wochenschrift* and the *Therapeutische Monatshefte*) regarding the action of Yohimbin, which is the active principle of the bark of tree which is found in German S W Africa. Yohimbin is poisonous, killing by interference with respiration and the heart's action when given in doses so small as 0.5 gramme pro kilo of the weight of the recipient (0.1 gramme pro kilo given subcutaneously is a lethal dose). The action of the drug is "somewhat like that of cantharidis," but apparently more irritation of the penis and less irritation of the urinary system, is caused. It appears, however, that even a short course of treatment is apt to derange the digestive functions. This, however, would hardly be considered a drawback by Asiatic patients. The drug is now in the market in the shape of tablets, each of which contains 0.05 gramme of the hydrochlorate, and of which 3 per diem is the dose.

The Hypophysis Cerebri—Friedmann and Maas, working in Munk's Institute, have succeeded in removing the Pituitary body in 18 animals by way of the soft palate and basis cranii. One of these animals lived three months and was then killed for examination. They conclude that the hypophysis is not of vital importance, in that either its removal causes no change, or that its functions are immediately taken on by some other gland, and hence no change in the organism takes place. From experiments on the cadavers of children, they believe that the route chosen by them may be of service to the surgeon when he is called upon to treat a case of tuberculous basilar meningitis—[*Berliner Klin Woch*, 52 of 1900].

Formula ad usum medicorum. Eczema—For the intolerable itching which accompanies eczema ani, and eczema scroti 2% acid boric with Herxheimer's salve gives good results. Lessars' salve contains 2% acid salicylic, but the boric acid is quite good enough and less expensive. A convenient formula is—

R. Ac Boric, 2 gm	i.e.,	gr 30
Zinci Oxidi		
Amyli Tritici, aa 25 gm	aa	gr 380
Vaselin, 50 gm		gr 760

M Apply twice daily with a glass rod. Smear the salve thickly over the affected part and then cover it with a layer of cotton wool bandaging the part suitably. The cotton wool is removed at the next

dressing, but the salve which has adhered to the part is left on, and covered with a fresh layer of salve and cotton wool

Every third or fourth day the part is well freed of salve, by cotton wool swabs dipped in boiled oil Swab gently, using plenty of oil

Then, after inspection of the part, repeat the salve and cotton wool treatment, until *all signs* of inflammation have disappeared

Then Liq Carbonis Detergens (Wright) is painted on the part with a bristle brush Only a small quantity is used for each painting Paint twice daily The smarting may be severe, but does not last for more than three or four minutes, and can well be borne, in view of the excellent results obtained

Diet.—Anything the patient cares to eat

The affected part must **not** be washed till the eczema is cured

W D SUTHERLAND

Service Notes

THE HONORS LIST

Star of India

THE King Emperor has been graciously pleased to make the following promotions in and appointments to the Most Exalted Order of the Star of India, on the occasion of the Darbar held on 1st January 1903, at Delhi, in His Majesty's Indian Empire, in commemoration of His Majesty's Coronation —

To be Knights Commanders

SURGEON GENERAL WILLIAM ROE HOOPER, C S I, Indian Medical Service (retired), President of the Medical Board at the India Office

INDIAN EMPIRE.

To be Knights Commanders

SURGEON GENERAL BENJAMIN FRANKLIN, C I E, Indian Medical Service, Honorary Physician to the King, Director General, Indian Medical Service, and Sanitary Commissioner with the Government of India.

To be Companions

LIEUTENANT COLONEL GERALD BOMFORD, M D, Indian Medical Service, Principal of the Medical College, Calcutta
MAJOR ALFRED WILLIAM ALCOCK, M B, F R S, LL D, Indian Medical Service, Superintendent of the Indian Museum

FOREIGN DEPARTMENT

GEORGE WATT, ESQUIRE, M B, C I E, Reporter on Economic Products to the Government of India.

His Excellency the Viceroy and Governor General of India is pleased to announce that the King Emperor has been graciously pleased to award the Kaisar-i-Hind Medical for Public Service in India of the First Class to—

LIEUTENANT COLONEL R W S, LYONS, Indian Medical Service
MAJOR DAVID SIMPLE, M D, R A M C, Director of the Pasteur Institute, Kasauli

His Excellency the Viceroy and Governor General is pleased to award the Kaisar-i-Hind Medal for Public Service in India of the Second Class to—

MRS ADAMS WYLIE, widow of the late Lieutenant Adams Wylie, of the Indian Medical Service, Bombay

MISS ELLEN ELIZABETH MITCHELL, M D, American Baptist Mission, Moulmein, Burma

MISS WITCHESON, Zenana Medical Mission, Peshawar, North West Frontier Province

MISS MARGARET O'HARA, M D, Canadian Presbyterian Mission, Dhar, Central India.

DR. T L PENNELL, Medical Missionary, Church Missionary Society, Bannu, North West Frontier Province

THE following special promotions and admissions to the Order of British India are notified —

(b) For admission to the 2nd class, with the title of "Bahadur"

Second Class Senior Hospital Assistant Debi ditta Saithhi Indian Subordinate Medical Department.

First Class Senior Hospital Assistant Pati Ram, Rai Bahadur, Indian Subordinate Medical Department

His Excellency the Viceroy and Governor General is pleased to confer the title of Rai Sahib as a personal distinction upon—

TARAK NATH GHOSE, Civil Assistant Surgeon, of the Prince of Wales Hospital, Benares

BABU KAILAS CHANDRA DAS, Senior Hospital Assistant, Sylhet, in Assam

KUMUD BEHARY SAMANTO, Civil Hospital Assistant, Bengal Presidency

A GOOD service pension has been conferred upon Colonel J T B Bookey, C B, I M S, in room of Surgeon General L. D. Spencer, C B, M D, who has retired with the special additional pension of £850

Colonel Bookey entered the Service in March 1872, attained to "Brigade rank" in October 1897, and became full Colonel on 2nd May 1900

He has been in military employ during almost the whole of his service, having chiefly served on the N W Frontier He has been an Honorary Surgeon to H E the Viceroy for many years, and has been P M O of the General Hospital, Kohat in 1897-8, of the Tachi Field Force 1898-99, of Lahore District (1900), of the Punjab Frontier Force (1900), of the Presidency District (1900), of China Expeditionary Force (1900), Presidency District 1901 02, and P M O, Frontier Force and Frontier District 1902 to date

He has served in the following campaigns, 1877-8, Jowaki, medal and clasp, N W Frontier Mahsud Waziris, 1881, Burma, 1886 7, despatches and two clasps, Black Mountain, 1888, despatches and clasp, Second Miranzai, 1891, despatches and clasp, Waziristan 1894-95, despatches and clasp, Malakand Force, 1897 98, despatches, China, 1900, despatches and C B

WE regret to have to record the death from Bright's disease, at Karachi on 10th January, of Colonel A. Dane, I M S, Principal Medical Officer, Sind District The deceased only joined his appointment in November last on the promotion of Surgeon General McConaghy

Colonel Dane was for many years Agency Surgeon at Bhopal, and only returned to India a few months ago from nine months' sick leave He entered the service in March 1875, and was an M D and F R C S I He served in the Afghan War, at Maiwand and Kandahar (despatches, medal and clasp) He was only 50 years of age

For the benefit of those interested in military millinery we republish the following —

"DRESS—OFFICERS—With reference to G O C C, No 755, dated 6th October 1902, the following descriptions of the service jacket and shoulder straps contained in Army Order 40 of 1902, amended to suit Indian requirements, are published for information —

JACKET—Material the same as worn at present, namely—khaki drill or serge, single breasted cut as a lounge coat to the waist, very loose at the chest and shoulders, but fitted at the waist, a 2½ inch expanding pleat down the centre of the back, sewn down below the waistband, and a waist seam and band 2½ inches wide, military skirt to bottom edge, a hook on each side at the waist, jacket cut low in front of the neck, turn down (Prussian) collar, to fasten with one hook and eye, tab underneath, with two button holes, to button across the opening, 2½ inches fall in the front and 2 inches at the back, collar edges to run V shape, showing top button between, two crosspatch breast pockets above 6½ inches wide and 7½ inches deep to the top of the flap, 2½ inch box pleat in the centre, two expanding pockets below the waist (pleats at the sides), 9½ inches wide at the top, 10½ inches at the bottom, 8 inches deep to the top of the pocket, fastened at the top with a small button, flap, with button hole, to cover pockets, 3½ inches deep, 10½ inches wide, sewn into bottom edge of waistband The top of the pockets should be sewn down at the corners in such a manner that on service the pocket can be expanded at the top also Outside ticket pocket in top of the waistband on the right side, inside watch pocket, with tab above for chain or strap Five medium (30 to 34 lines) buttons down the front, the bottom one on the lower edge of waistband To be lined or not as required, with lining of similar colour to the jacket. Shoulder straps of the same material as the garment, edged all round except at the shoulder seam, according to the branch of the service, attached to the jacket by an underpiece passed through a loop on the lower part of the shoulder and fastened at the top by a small button, which passes through both underpiece and shoulder strap, the top of the strap is triangular, the sides being about 1½ inches long, and the button 1 inch from the centre point Cuffs pointed 5½ inches deep at the point, 2½ inches deep at the back.

Buttons—Gilding metal, ungilt, 'die struck,' not 'mounted' Regimental patterns.

The *badges* of rank and corps are to be 'gilding metal, ungilt,' and the shoulder straps for I M S are "edging $\frac{1}{4}$ inch scarlet cloth, loop of white braid, for R A M C, edging $\frac{1}{4}$ inch white cloth, loop of dull cherry braid," shape same as for Royal Artillery

LANGUAGE—It is notified for information that when applying for examination by the Higher and Lower Standards in Urdu candidates should be required to state the date upon which they last appeared for examination in order to prevent their presenting themselves twice for the same examination within the period laid down by para 1260, A. R. I, Vol II, Part A

URDU, HIGHER STANDARD—In continuation of G O C C No 712 of 1902, the attention of candidates for examination in Urdu is drawn to an "Annotated Glossary to the Bagh o-Bahar, Part II, Higher Standard Selections," prepared by Lieutenant-Colonel Ranking, M.D., Indian Medical Service, and published by Messrs Thacker, Spink & Co

In *Physician and Friend*, the author gives some account of Dr A. Grant's friends, and among others Simon Nicolson, a well known Calcutta practitioner of the thirties and forties. It is mentioned that Dr Nicolson is introduced by Sir John Kaye into his novel "*Peregrine Pultney*" under the title of Dr Nicolas Fitzsimon, where he is thus described—"Everybody knows him in India—finest 'fellow in the world—kind, generous, trump of a fellow. Go to him—give you breakfast, tiffin, dinner, shelter, advice, everything. If you are sick go to him—sure to cure you—sure to be kind to you—save more lives than the invention of the lifeboat, a most excellent fellow—good Samaritan—sure to love him."

The author does not mention that Simon Nicolson entered the Indian Medical Service on 2nd February 1807, and that he lived in the house which is now the United Service Club, Calcutta. It is said that the diagonal road leading from the Club to Government House was made for Dr Simon Nicolson's special benefit. Another interesting discovery has recently been made about Nicolson. Visitors to the big room of the Asiatic Society of Bengal may remember a painting, entitled "a Poet in his Study," recently we understand that this picture was found by Prof Wilson to be the portrait of Simon Nicolson, and not that of an unknown poet. A copy of it has been put up by Major D M Moir, I M S, in the Presidency General Hospital, of which Nicolson was for twenty years Superintendent.

We have received from the War Office an official communication, stating that the Government of India has approved of the following rates of pay for officers of the Royal Army Medical Corps serving in India—

Lieutenants	Rs 420 per mensem
Captains	" 475 "
" over seven years' service	" 530 "
" over ten years' service	" 650 "

Charge allowance will be given to the medical officer in charge of a hospital as under—

300 beds and over	Rs. 240 per mensem
400 " "	Rs 180
100 " "	Rs 120
50 " "	Rs 60

Specialist pay at the rate of Rs 60 per mensem will be granted to officers below the rank of Lieutenant-Colonel who may be appointed to posts in India, such as would entitle them to specialists' pay under paragraphs 36 and 41 of the report of the Reorganization Committee.

It will be seen that only Captains and Lieutenants, R A M C, are affected by this new rate of pay.

This is of special interest as regards the pressing question of I M S officer's pay, as we said before, nothing will make the I M S contented till their present rates of pay in civil and in military employ are decidedly augmented, and in considering this the fact that the R A M C officers may draw "charge allowance" should be borne in mind.

We are disappointed at the amount provided for "specialist pay," two rupees a day is not a very liberal inducement to an Army Medical Officer to "specialise."

THE Administrative Military Medical Charge of Burma will be held alternately by an I M S Officer and a R A M C officer.

THE Administrative Military Medical Charge of Peshawar District will be held by Lieutenant-Colonel R A M C, and that of Derajat District by an I M S Lt Colonel (Para. 94, I A R, Vol. VI, corrected, in G O C C 933, dated 25th November 1902.)

LIEUT J W LITTLE I M S, and Lieut. G E Charles, I M S, have passed the Lower Standard in Urdu.

With reference to paragraph 502, Army Regulations, India, Volume VI, it is notified for information and guidance, that all future supplies of summer uniform clothing* for Attendants of the Army Hospital Corps should be made of khaki instead of blue drill. For men already in the service the change should only be made when the present blue drill clothing is worn out.

2 Khaki puggies with blue ends, which can be hidden on service, should be substituted for the present blue and scarlet puggie when the summer uniform is changed from blue to khaki. G O C C 946, dated 25th November 1902.

DRESS OF OFFICERS—SWORDS—Attention is invited to paragraph 1973 (1), King's Regulations, as reconstructed by Army Order No 126 of 1902, which lays down the occasions on which swords are to be worn by officers, and the manner in which they are to be carried by mounted officers.

2. Attention is also invited to G O C C No 882, dated 10th November 1902, regarding the carrying of the sword on the saddle by mounted officers. G O C C 937, dated 25th November 1902.

DRESS—MINIATURE MEDALS—The rules regarding the wearing of miniature medals and decorations by officers in mess dress, contained on page 8, line 13 (as reconstructed by India Army Circular 10 of 1902), Army Regulations, India, Volume VII are applicable to those warrant officers of Departments, and to Volunteers who are entitled, by regulations, to wear mess dress (G O C C 939, dated 25th November 1902).

MAJOR W E. JENNINGS, M.D., I M S, has been granted two years' combined leave.

THE following decorated Medical Officers were present at the investiture in the Diwan-i-amm on 9th January at Delhi—Sir Benjamin Franklin, Lieutenant-Colonel T E L Bate, C I E, I M S, Surgeon General D Sinclair, C S I, Colonel T H Hendley, C I E, I M S, Lieutenant-Colonel Fenn, C I E, R A M C, Lieutenant-Colonel H R. McKay, C I E, I M S, Lieutenant-Colonel Ramsford, R A M C, C I E, Lieutenant-Colonel C H D Gimlette, C I E, I M S.

CAPTAIN H KIRKPATRICK, I M S, acted temporarily as Second Surgeon, Madras General Hospital.

CAPTAIN W H TOCKER, I M S, acted as Third Physician at the General Hospital, Madras.

LIEUTENANT A G McKENDRICK, I M S, is appointed to the officiating medical charge of 6th (P W O) Bengal Cavalry.

LIEUTENANT H H KNAPP, I M S, is appointed Officiating Medical Officer, 8th Bengal Lancers.

LIEUTENANT T S B WILLIAMS, I M S, has passed the Lower Standard in Urdu.

THE services of Lieutenant-Colonel S J Thomson, C I E, I M S, and of Captain J C Robertson, I M S, are replaced at the disposal of United Provinces Government. Lieutenant-Colonel Thomson was deputed to South Africa to take charge of the Boer Concentration Camps.

IT is proposed to establish a Central Manufacturing Medical Store Depot at Nashik.

MAJOR A W DAWSON, I M S, has resumed charge of the Civil Medical duties at Roorkee.

MAJOR R. W H JACKSON, M.D., R A M C, is appointed Chief Plague Medical Officer, Calcutta, *vice* Lieutenant-Colonel H E Deane, R A M C, going home.

LIEUTENANT COLONEL J P BARRY, I M S (Bombay), is granted combined leave for one year.

LIEUTENANT COLONEL K H MISTRI, I M S, is appointed Civil Surgeon of Thana, *vice* Lieutenant-Colonel Barry.

LIEUTENANT COLONEL H W STEVENSON, I M S, is granted nine months' combined leave from 15th February.

COLONEL MORIARTY, R A M C is confirmed in his appointment as A. M O in the Central Provinces.

LIEUTENANT COLONEL C P LUKIS, I M S, and Capt. E A R Newman, I M S, have passed the colloquial test in Bengali.

MAJOR H. J. DYSON, I M S, on leave, is appointed Civil Surgeon of Hazaribagh.

* Blouse, coats, knickerbockers, puttees.

THE leave of Captain C R Stevens, F R C S, I M S, is cancelled from 24th October, he having returned from furlough on that date

CAPTAIN OLDHAM, I M S, is temporarily appointed Civil Surgeon of Hooghly, but on the departure of Major Vaughan, I M S, on furlough in April it is understood that Capt. Oldham will become Superintendent of the Medical School at Sealdah and Police Surgeon, Calcutta.

On the return of Major Pilgrim, I M S, F R C S, he resumes his appointment as Surgeon-Superintendent of the Presidency General Hospital, and Major D M Moir goes on three months leave to Egypt. On return Major Moir will probably go to Hooghly as Civil Surgeon

MAJOR A W DAWSON, I M S, has got furlough for one year

LIEUTENANT COLONEL G D BOURKE, R A M C, officiated as P M O Bombay, and Nagpur Districts, vice Colonel W O Wolseley, R A M C, gone home

SOME months ago we showed the absurdity of the *test dots* as a measure of vision for recruits. We now find that apparently our remarks have taken effect as the following notification appears to show

"India Army Form 1107 Med (Test figures for the Native Army) has been introduced for the purpose of testing the eyesight of native soldiers, and a copy will be furnished to every Native Unit by the Principal Medical Officer, His Majesty's Forces in India."

We invite the opinions of medical officers on the change

LIEUTENANT COLONEL H ARMSTRONG, I M S, is granted 90 days accumulated privilege leave

ON return from furlough Lieutenant-Colonel Macrae acted as Civil Surgeon of 24-Pergunnahs, pending the return of Captain R Bird, I M S, from special duty in England

CAPTAIN H INNES, I M S, on being relieved at Hooghly, acted for some weeks as Superintendent, Central Jail, Midnapore

CAPTAIN L ROGERS, I M S, is now First Surgeon to the Presidency General Hospital, but it is understood he wants leave early this hot weather

CAPTAIN J C H LEICESTER, I M S, was appointed to have charge of the Pilgrim Camp at Chittagong

CAPTAIN W LETHBRIDGE, I M S, returned to Madras from leave on 15th January

CAPTAIN T S ROSS, I M S, is now Health Officer, Madras Municipality

MAJOR G G GIFFARD, returned from furlough on 7th January

THERAPEUTIC NOTES

IN THE HIGH COURT OF JUSTICE, CHANCERY DIVISION

Before MR. JUSTICE BUCKLEY, on the 16th inst

THE above action was in his Lordship's paper to day for trial and was brought by Messrs Horlick & Co, the manufacturers of Horlick's Malted Milk, against Messrs T Howard Lloyd & Co, of Leicester, manufacturing chemists, to restrain them from selling, under the name "Malted Milk Food," any food not made by the plaintiffs, and from passing off any like preparation of theirs as a preparation made by the plaintiffs

Mr J Fletcher Moulton, K C, M P, Mr Ashton Cross, and Mr Duke, instructed by Messrs. Alpe & Ward, appeared for the plaintiffs, and Mr S O Buckmaster, K C, and Mr Frost, instructed by Messrs Dale, Newman & Hood, agents for Messrs J & S Harris, of Leicester, appeared for the defendants

On his Lordship taking his seat, Mr Fletcher Moulton said — "May I mention the case in your Lordship's list, Horlick & Lloyd I appear for the plaintiffs, who are manufacturers of the very well known preparation called Malted Milk, and the defendants are a firm who have been selling Malted Milk Food. Neither party are anxious to have confusion, and I frankly admit that we withdraw all suggestion that there has been anything in the way of bad faith in their selling it. They consent to a perpetual injunction not to use the name of Malted Milk Food, or any other name of which Malted Milk forms part, and they agree to destroy labels and to give the names of customers. Parties have agreed to an injunction on these terms.

The defendants' Counsel assenting, judgment was accordingly given.

The dietetic treatment of gonorrhea, according to H Gilman Thompson, consists in avoiding all alcohol and stimulating food and drinking bland diluents. In severe cases, and in cases among young children who have in some manner been infected, a skimmed milk diet should be ordered at first. Later, light farinaceous articles, stale bread and butter, milk and rice puddings should be added. They must avoid acid fruits, all highly seasoned and fried foods, condiments and pastry. Alcoholic drinks in all forms are absolutely prohibited. Walt liquors are especially bad, as they are in all diseases of the urethra, bladder or prostate. No late meals should be taken. By observing these directions troublesome chordee and ardor urinae, so apt to occur in the first fortnight, may be prevented. Large quantities of such waters as soda, soltzer, apollinaris, and two or three quarts of plain water should be drunk. The fluid dilutes the urine, diminishes the danger of cystitis, and has the additional advantage of decreasing the appetite

Dionin

Darier, in *The Monthly*, recommends dionin for tracheitis or bronchitis, prescribed in combination as follows

R. Dioninæ	gr iii v	20-30
Quinine sulph		
Sodu bicarb, ãi	ss 2	
M Ft Chart No x Sig	One Powder three times daily,	
or		
R. Dioninæ	gr iii v	20-30
Ammonii chlorid	gr v viii	30-50
Sodu bicarb	ss 10	

M Ft Chart No x. Sig One powder three times a day. Fromme and Heinrich report this preparation to be a valuable substitute in morphinism, its utility being attributed to the fact that it produces no habituation, also in consequence of its ready solubility accumulation is less liable to take place. They claim that the morphin hunger is appeased and is not replaced by hunger for dionin. It is recommended in such cases in doses ranging from gr 4/5 to gr 1 (05 06). And to replace from 1/3 to 3/5 gr of morphin he employs a daily total of gr xv (1 00) of dionin.

Dionin is ethyl morphin hydrochlorate. It is soluble in seven parts of water, two of alcohol, and in twenty of syrup. The usual adult dose ranges from gr 1/2 to gr 1 (015 06) (*Journal A Med Assoc*)

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Original Articles

REPORT ON THE OUTBREAK OF EPIDEMIC DROPSY IN THE BARISAL JAIL

By R. COBB, M.D.,

LIEUT. COL., I.M.S.

Civil Surgeon, Barisal

ABOUT the end of last October I noticed that an unusual number of prisoners were being admitted into the Jail Hospital, suffering from cedematous swellings of the lower extremities especially and the body generally. My attention was not only arrested by their numbers, but also by the fact that they occurred in prisoners who were in good health and not as is usual the subjects of anæmia or broken down by other diseases, there was in fact an acute instead of a gradual onset.

The majority of these patients also instead of coming from the convalescent and special gangs, were admitted into hospital direct from the work sheds. I soon discovered moreover that these cases differed in their symptoms from the usual run of dropsy cases that are admitted into jail hospitals.

They were not anæmic on admission, though they rapidly became so, a careful examination of all the organs gave negative results, there was no previous history or symptoms of malaria, chronic diarrhoea or chronic dysentery, and the urine was free from albumen. There were no worms or ova to be found in the intestines, although a special search was made for the anchylostoma duodenale and, finally there were no symptoms of peripheral neuritis.

On first admission of these patients into hospital, the only symptoms were a more or less noticeable cedematous swelling of the lower extremities, the abdomen, the upper extremities and the face, putting these in the order of frequency. They complained of a certain amount of pain in the limbs and chest, this appeared to be due to the distention caused by the accumulated fluid, there was breathlessness on exertion, the pulse was quickened to 90 or 100 per minute, and the respiration from 28 to 35 per minute. This increase of the pulse respiration ratio was invariably noticed. Almost all the patients gave a history of a slight attack of fever, lasting two or three days previous to the occurrence of the dropsy. In some of the cases which were admitted into hospital in the pyrexial stage the temperature was found to vary between 100° and 102°.

A rash was seen in two of the cases, in one it consisted of a purplish petechial papular eruption situated on the lower extremities, in the other, there were purplish streaks along the course of some of the veins of the arms and legs.

These symptoms led me to conclude that I had to deal with "epidemic dropsy."

Number of cases and result—Since the end of October, 23 cases have been admitted into the Jail Hospital, of these seven have died, four have recovered, and 13 are still in hospital or have been released from the jail. I took notes of 17 of these cases.

The following is an abstract of one of them —

Prisoner Donai, aged 26 years was admitted into the jail on the 28th June 1902 in good health, weighing 127lbs. On the 1st September he came to hospital with fever and was discharged cured on the 8th September. The fever was very slight and was accompanied for two days with three or four mucus stools slightly tinged with blood. He stated he was quite recovered when he went back to work on the 8th September.

On the 18th October he noticed that his legs began to swell, the swelling gradually increased, and he was admitted into hospital on the 21st October, and from that date the cedema extended all over his body.

On the 28th October, I made the following notes on his state: "Since yesterday he has felt pains all over his body which he describes as tense pains. There are cedematous swellings of the feet, legs, arms, face and subcutaneous tissues of the chest and a certain amount of ascites. Pulse weak (120). Respiration 40 per minute, and he complains of breathlessness on the slightest exertion. There are no signs of scurvy, his gums being quite firm, though there is a black line on the gums of both upper and lower jaw. He is not anæmic. His urine is faintly acid and contains no albumen. No anchylostoma or their ova could be found on microscopical examination. There are no symptoms of peripheral neuritis (i.e., absence of knee jerk or anæsthesia)."

Note on 27th November—"Extremities still cedematous, but less ascites. Pulse 96. Respiration 32. Breathing easier. General condition much improved. This patient gradually got better and is now practically quite recovered. The above is a typical example of most of the non fatal cases. The following is an extract from the notes of a fatal one —

Prisoner Asaruddin, aged 30, was admitted into the Jail on the 3rd July 1902, in good health. On the 10th August he came to hospital with "fever," but was discharged cured on the 18th August. He was again admitted for "scabies" on the 3rd November and discharged cured on the 10th November. On the 5th November, whilst in hospital undergoing treatment for the scabies, he noticed a slight swelling of the right foot. On the 15th November he was admitted into the hospital for "dropsy," having cedematous swellings of both legs. After admission his abdomen swelled.

On the 27th November 1902, I made the following note—"Cedematous swellings of legs, forearms, left side of abdomen and neck, a black line on but no swelling of the gums. Has two or three loose stools daily with mucus. No pain or tenesmus."

December 4th—"Swelling of feet less, but general symptom worse. Breathing very laboured. Respiration 40. Pulse 92 per minute."

A microscopic examination of the patient's blood showed a relative increase of the leucocytes as compared with the red cells. No anchylostoma were found in the feces, and there was no albuminuria.

From this date the patient grew steadily worse, he gradually became weaker, his breathing more embarrassed. An examination of the chest showed that fluid had collected in both pleura. Symptom of heart failure set in, and he died on the 8th December 1902.

A *post mortem* examination was held on the same day. The subcutaneous tissues all over the body contained an abnormal quantity of fluid. There was an ecchymosis in the loose cellular tissue just behind the sternum.

Both *pleura* contained serous fluid to the amount of some two pints each

The *pericardium* contained six ounces of serous fluid. The *heart* was healthy and contained a decolorised clot. The *lungs* were oedematous. The *spleen* was enlarged to the extent of about one third larger than usual. The *kidneys* were congested, and there was an ecchymosis in the connective tissue around the left

These two were very fair examples of the remainder of the 23 cases with which I had to deal, and it seemed to me that the clinical picture presented by them closely resembled that of the disease described under the name of "epidemic dropsy" by Colonel McLeod, I.M.S., as having occurred in Calcutta in 1877-79, and I soon came to the conclusion that my cases were examples of this disease

I had not then seen Captain L. Rogers' paper in the *Indian Medical Gazette* for June 1902, as I was on leave in England at that time. I will now review the chief characteristics of the disease as seen in the Barrisal Jail

Dropsy was present in every one of the 23 cases and was distributed as follows —

In the lower extremities in 23 cases	
" upper "	10 "
" face "	7 "
Scrotum and penis	3 "
Chest wall	2 "
Back	2 "
Throat	2 "

It invariably appeared first in the feet. In all the seven fatal cases, large quantities of serous fluid were found in the pleural, pericardial, and abdominal cavities, and the lungs were oedematous. A considerable swelling of the throat was also noticed in two of the fatal cases

Fever preceding the swelling of the lower extremities was noticed in nearly all the cases. It was of a very slight character, ranging between 100° and 102°, and rarely lasting longer than two or three days

A *rash* was noticed in two of the cases only, it was petechial in character in both. In one case it assumed the form of dark purple papillæ, the colour of which did not disappear on pressure. These were situated on the legs. In the other case some of the veins of the arms and legs were marked by purple streaks

Intestinal symptoms were observed in most of the cases, eight of the patients had been treated for dysentery within a period of three months before the onset of the dropsy

Most of these dropsy cases also suffered from two or three loose stools daily, with mucus and slight abdominal pain, on first admission into the hospital on account of this disease

These attacks of what appeared to be a slight colitis rarely lasted longer than a few days

Respiration and circulation were always gravely affected at a very early period in the course of the disease. The pulse was usually quickened, and the respirations were always very rapid especially on the slightest exertion. This embarrassment seemed to be due mainly

to the fluid in the pleura and to the oedema of the lungs and possibly to the blood change

Anæmia, however, was not a marked symptom in any of the cases on first admission into hospital, it however rapidly developed and reached a noticeable degree in the fatal cases

Nervous symptoms — Pain, which was described as of a tense and burning character, was almost always complained of in the parts affected by the dropsy. It was especially troublesome when there was oedema of the back or chest walls. No anæsthesia or loss of knee-jerk was present in any of the cases, nor was there any paralysis, although in the cases which recovered a considerable wasting of the muscles was noticed on the subsidence of the oedema, especially in the lower limbs

Condition of the Gums

A scorbutic condition of the gums was not present in any of the patients on first admission into hospital, but in some of the cases they became swollen and slightly ulcerated after two or three weeks

An almost constant symptom, however, was a black discoloration of the gums of both jaws. In order to discover if this symptom had any connection with the disease, I examined the mouths of all the prisoners in the jail, and found that 36 presented similar appearances out of a population of over 500. Curiously enough two (2) of these 36 subsequently developed epidemic dropsy

I elicited a history of an attack of fever, though usually of a slight character from most of these 36 prisoners

Incidence of the Disease

In SEPTEMBER one case occurred on the 15th

In OCTOBER cases occurred on the 10th, 18th, 20th and 31st

In NOVEMBER cases occurred on the 5th, 10th, 12th, 14th, 15th and 17th S.P.

In DECEMBER cases occurred on the 1st and 3rd

There have been no new cases since the 3rd of December

Duration of the Disease

The few cases that have recovered up to the present date were under treatment from six weeks to three months

Death in the seven fatal cases occurred on the following days of the disease, 13th, 14th, 18th, 23rd, 25th, 30th and 32nd

Mortality

The mortality of this outbreak is very high, it has already reached 30 per cent, and there are still one or two cases in hospital in which the prognosis appears to be unfavourable

Mode of death

Death in all of the seven fatal cases appeared to result directly from the accumulation of fluid in the pleural and pericardial cavities and from oedema of the lungs. In two of the cases the

immediate cause of death was a sudden syncopal attack, and in these the heart was found to be dilated. The remaining fatal cases died more slowly with symptoms of gradually increasing apnoea, in one case accelerated by a considerable cedematous swelling of the throat.

Treatment

Symptomatic treatment was generally adopted, and in a few cases the administration of iodine and non appeared to do good, but, on the whole, I am inclined to think it was of little avail. As soon as the nature of the disease was realized, isolation of the affected prisoners was strictly carried out, and I attribute the subsidence of the epidemic mainly to this precaution.

Microscopic examination

A microscopic examination of the blood and faeces was made in most of the cases. The blood was examined both in its fresh undiluted state, and in dry films prepared and stained according to Ehrlich's method. Nothing abnormal was found in the blood except in advanced cases, when a marked relative increase in the number of leucocytes, as compared with the red blood corpuscles, was noticed.

The examination of the stools gave negative results.

Remarks

The diagnosis in these cases does not appear to be doubtful, every symptom recorded by previous observers has been seen in this outbreak. The sudden onset and too often rapidly fatal termination of the disease in previously young and healthy men distinguish these cases from the dropsy that occurs in patients whose health has been broken down by other complaints.

The absence of symptom of peripheral neuritis, the acute mode of onset of the disease and the presence of anæmia equally distinguish it from ber-beri. Scurvy may also be excluded from consideration as scorbutic symptoms were only found in a few cases and late in the disease. We have apparently to do with a specific epidemic disease. The anæmia and the pigmentation of the gums seem to indicate a rapid and severe hæmolytic of the blood, and the almost invariably preceding intestinal trouble suggests that the specific organism makes its attack from this direction.

THE MODE OF ENTRY OF PLAGUE INFECTION INTO THE HUMAN BODY *

By H. E. DEANE,

LIEUT. COLONEL, R. A. M. C.,

Late Special Plague Medical Officer, Calcutta

In connection with this subject definite statements are made which are in direct contrariety to each other. For instance, we meet with opinions that infection takes

* This paper was written for the British Homœopathic Society, but as it deals only with etiological questions it is here published at the request of the author.—ED., I. M. G.

place through the skin "in some instances," in "75 per cent of cases," "seems probable that most frequently infection takes place through the skin," "it is mere conjecture that the poison is conveyed through scratches," "infection is chiefly acquired through the lungs," "in almost all cases of plague, an abrasion which was the site of inoculation could be found, and it was often under the toe ring worn by most of the natives." This is sufficient to show that there is good cause for further study of the question. Multiplicity of professional opinions of diverse kinds invites examination of the grounds for the various opinions.

These notes primarily have reference to the commonly expressed opinion that plague is contracted by external inoculation through scratches or abrasions of the skin and mucous membrane.

I have never been able to satisfy myself that abrasions were so common in cases of plague as usually stated, and in my hospital experience regarding plague I have found them very rarely.

At the beginning of this year's epidemic in Calcutta, I thought that by examining all the cases possible wherever they occurred, one would come across things that were not so often observable among the cases that find their way to hospitals.

The patients had often to be examined under difficulties, into details of which I need not enter.

[Lt Col Deane then gives a résumé of such knowledge as has been obtained about the plague bacillus, and continues—]

I may now pass to the evidence of infection taking place through the skin. I believe it to be generally accepted that infection does not naturally take place through sound skin and mucous membrane, so I may be allowed to presume there must be a solution of surface to allow the plague bacillus to enter.

"What is the evidence, first of all, as to the frequency of solutions of the skin?" "I must say here that an examination of the evidence recorded by the Indian Plague Commission displays confusion on this point. I can best explain what I mean by extracting minutes of the evidence given by a witness—Dr N. H. Choksy, in charge of Arthur Road Municipal Hospital, Bombay."

"What do you think is the ordinary mode of infection in plague?" "The most frequent is infection from the skin."

"What evidence have you to show that?" "The evidence is, of course, seen in the preponderance of the buboes in the inguinal and femoral regions in those people who generally go about barefooted."

"Have you examined the feet of all the patients who had inguinal buboes?" "Yes, I have examined them very frequently, with scarcely satisfactory results as regards the local reaction except in a few cases."

"In how many cases do you think you have found local reaction?" "Not more than five or seven per cent."

"What do you mean by local reaction?" "I mean something to show the point of entrance of the virus into the system—an abrasion or any channels of infection in the skin itself."

"Would you consider an ordinary scratch a local lesion?" "In this sense, that there is a channel for absorption from that."

"Is it not possible that plague might enter through a scratch and leave no local lesion?" "Yes."

"I understand that many patients have cracks and fissures on the soles of their feet and elsewhere?" "Yes."

"Do you not think plague might come through them?" "Yes, it might."

"Without giving rise to any local inflammation?" "Yes."

There is evident confusion here between an abrasion through which poison might have effected an entrance, but with no evidence of such having happened, and a specific lesion which is assumed to be the point of entry. The same confusion is apparent in several of the Commissioner's examinations. No information is given as to the frequency with which abrasions occur in relation to buboes in various situations, but we are told

that plague generally is contracted from the skin because inguinal and femoral buboes are more frequent than others. No doubt, we are left to infer that there must be an abrasion in connection with buboes situated elsewhere than in the groin, but if the abrasion is to be inferred simply from the existence of a bubo, as seems to be done in the case of the groin, I think the evidence is wanting in important respects. However, to proceed with the evidence regarding skin solutions.

Another minute of evidence is—

Major T. E. Dyson, M.S.—“How do you account for the occurrence of a considerable number of cases of bubonic plague in one house?” “I should say they contract the infection from the original source. The house is infected and the germs enter through the abrasions of the skin.”

We are left to infer here that every plague case presents abrasions.

iv Colonel W. McConaghy, M.S., Principal Medical Officer in Sind, formerly Civil Surgeon of Poona. “You have observations, I think, to show how the virus is introduced into the body?” “Yes. I think in a number of cases it was introduced through abrasions or any little cuts on the surface of the body, if they came in contact with dust or earth in which plague germs were present.”

“You saw the abrasions in certain cases?” “Yes. No direct experiments or observations were made in the hospital as to the causation of the disease. It was, however, noted in two undoubted cases of plague that the patients had small swellings, which appeared like hair boils, a little below the enlarged glands in the groins. In a third case the patient had received an injury (abrasion) on one side of the chest. He got fever about a week after with a well marked painful gland in the axilla of the same side. In a fourth case there were unmistakable signs of bubonic plague, with glandular enlargement in the left inguinal region, in a patient who, some days before admission, had received an injury on his left toe, which was then in an unhealthy looking and contused condition. This apparent connection between the injury of certain parts and the affections of the glands on the same side may possibly account for the entrance of the plague bacillus into the system.”

v Mr K. B. Shroff, Deputy Health Officer, Bombay. “Did you find many abrasions, did you search for them?” “Yes.”

“Do they represent a large or a small proportion of the total cases?” “A great many of the cases.”

“What kind of abrasions, and where were they chiefly?”

“Between the toes, there was a slight rupture of the superficial layer of the skin. We cannot find it unless we widen out the toes, and then we find a rupture of the superficial layer of skin between them.”

“Assuming the virus enters one of these lesions, were there any local signs distinguishing them from other lesions?” “No.”

“There was no inflammation or swelling?” “No inflammation, nothing whatever.”

“You merely infer that the virus had thus entered because there were lesions?” “Yes.”

“Did you find corresponding lesions to account for buboes in the axilla?” “No.”

“Did you search the hands?” “Yes.”

“How do you account for the buboes in the axilla?” “There might have been, but we did not find any.”

The above are fair samples of the general evidence in favour of skin infection, and it is not necessary to multiply them.

Briefly, the evidence amounts to this. Because there are buboes, infection must be through the skin. If abrasions exist, the virus must have gained an entrance through one of them. If no abrasion can be seen, it must exist nevertheless.

There is evidence of a more particular kind in the shape of bacteriological examination with regard to the bacilli being found in some parts of the skin, and lesions of the skin, by Major Childe.

The minutes of evidence are too long to insert, so I will epitomise them.

Out of many cases examined, in only four could bacilli be found in skin lesions. The lesions were like a small papule which had been scratched. There was a slightly inflamed base, a little serum on the top, and then a scratch mark. In one case, with a left axillary bubo, there was one papule on the fore-arm, nothing about the fingers. In the second case, with a right femoral bubo, there was a papule on the outer part of the right leg. In the third case, with a left axillary bubo, there was a small papule close to the left scapula. In the fourth case, with right and left inguinal buboes, there was a papule about the middle line of the penis. In each case a blood culture was made from the finger at the same time, but no bacillus was found. In the first case, the man had scratches on the arm opposite to the side of the bubo, and on his legs, but none of these were examined for bacilli in that case.

I wish to note specially that the bacillus was not discovered in connection with ordinary scratches, which presented no signs apparently calling for investigation, but in connection with a papule which itself had led to the part being scratched. In reply to a question as to the channels of introduction of the virus, Major Childe said—

“I think in some instances through the skin.”

It is convenient here to give other bacteriological evidence about infection through the skin connected with any particular bubo. Major G. S. Thompson, M.S., said—“In those cases where plague bacilli had been isolated from the supposed initial lesion, I was able, at the same time, to demonstrate the presence of bacilli in the serum of a blister raised upon the opposite limb.”

There are other references to skin lesions in the evidence recorded by the Commission, but they will not help us much, for instance, a bleb was assumed to be the point of entry in one case, because the bubo was on that side, the bleb was not examined for bacilli.

Now, for my own part, I have never been satisfied that cuts and abrasions to the extent of forming a vulnerable solution of continuity, of tissue exist to the extent which is assumed.

I say vulnerable because in very many natives, cracks and fissures can be seen on the heels, affecting the outer layers of a greatly thickened epidermis only.

Seemingly these fissures do not afford a point of entry of the virus, as I have not come across any case in which a local lesion has been noted on the sole of the heel. In my plague hospital experience I was struck with the absence of abrasions or cuts about the natives' feet, and often remarked it to my assistants, though I did not carefully examine all cases. In the series which forms the basis of this note, I carefully examined the whole limb connected with a bubo, separating each toe, or finger, and mostly examined the other limb unconnected with a bubo.

I will briefly relate the cases, which are unselected, and are such as I had opportunity of seeing alive. There were other cases said to have skin lesions, but as they died before I could see them, I make no reference to them.

The cases number 231, of which 157 were males, 74 females. The result I am unable to give in the case of nine men and one woman, of the remainder, 67 men died and 34 women, giving a male and female mortality of 45.2 per cent and 46.5 per cent respectively. To dispose of the toe rings first. Of the 157 males, four had toe rings and one a ring on the left little finger. He had a left axillary bubo. One man with toe rings also had a left axillary bubo. One man with a ring on each big toe had parotid buboes. Two men only had toe rings, on the same side as their inguinal buboes. In passing I may say that it is very uncommon to see men in Calcutta with toe rings at all. Of the 74 females, seven had anklets, wristlets or rings, one case had a left femoral bubo with a ring on the second toe of the right foot, one had no bubo with anklets, wristlets, and rings on both big toes, one had a left

femoral bubo with anklets on *both* legs, one had a *left* femoral bubo with anklets on *both* legs, and rings on the second, third and fourth toes of the *left* foot, one had a *left* femoral bubo with a ring on the second toe of the *left* foot, one had a *right* femoral bubo with an anklet on the *right* leg, and in one case with toe rings I was not allowed to examine the groins, but I strongly suspected the presence of a bubo. In no one of those cases was a suspicion of an abrasion found under the bangles or rings.

I may say definitely that plague is not contracted in Calcutta through abrasions under toe rings, and I do not mind going so far as to say, in no other city or locality either.

Next, as to skin lesions, I will distinguish between abrasions such as are supposed to afford entry for the virus, and such lesions noticed during the progress of the case as may be supposed to indicate the point of inoculation. Among the 231 cases I found abrasions (I use the word now for convenience) on eleven only, and I give brief details.

1 Soft corn between fourth and fifth right toes, with right femoral bubo.

2 Sore, result of a burn four months previously, on dorsum of first left phalangeal joint, with left femoral bubo.

3 Dry crack between fourth and fifth right toes, with right popliteal and inguinal buboes.

Two or three other men in the same house had the same sort of eczematous patch between the fourth and fifth toes of the left feet. I have no record of these men contracting plague.

4 Small hard scab over front of right knee said to be result of a sore two months before. Right inguinal bubo.

5 Small wound on outer side of left sole inflicted by treading on a nail. Fever set in four days later, with slight enlargement of several left femoral glands. Plague?

6 Small abrasion on outer side of right foot, said to have been caused by a fall downstairs in the evening. Fever and right femoral bubo appeared the following morning.

7 Small wound scabbed over, below and in front of right malleolus, inflicted by wire eight to ten days before getting ill. Slight enlargement of right femoral glands, said to have had high fever for four days.

There were two other cases of plague in the same room about the same time.

8 Scar of a burn on left buttock, said to have happened two days before the onset of fever with left inguinal and femoral buboes, two days after that right inguinal and femoral buboes appeared, and a few days later a submental bubo. I saw the case about 15 days after the onset of illness. The right inguinal buboes were then larger than the left.

9 Ulcer with scab below right knee, from a wound a week before getting ill. Right and left inguinal and femoral buboes.

10 Small scabbed ulcer just above left external malleolus, result of an injury nine days before illness. Left inguinal and femoral buboes.

11 Small sore on pinna of right ear due to ear being pierced for a ring, four to eight days later got fever and right cervical bubo.

In none of the cases was there anything to attract attention in the way of any local inflammatory action, nor were there any signs whatever of a possible site of inoculation elsewhere. The infrequency of lesions to account for the entry of the virus which appears above is also instanced by Major G. S. Thompson, I.M.S., who remarks on the rarity of such lesions, although carefully looked for, and says — "At Parel Hospital (in Bombay) only five such instances were discovered amongst 304 patients, and many medical officers studying plague there were daily examining evidence of this mode of infection, and the medical subordinates were instructed

to critically examine all admissions for slight wounds, etc., below the affected lymph gland. In the Satara Hospital such lesions were even rarer than at Parel." So, when patients specially examined in hospital display skin abrasions to the extent of just over 1½ per cent, and patients examined out in the slums just under 4½ per cent, we have to choose between that experience as to the frequency of such lesions and such generalised statements as that they are always found, sometimes found, probably could be found, would be found if looked for, and if looked for but not found, are there all the same.

I next come to skin lesions occurring in the course of a case of plague, and evidently a part of the disease whether considered in the light of presenting the point of inoculation or not. I found such lesions in 24 out of the 231 cases, or 10.31 per cent. The first noticeable thing about the lesions is that none of them were in situations which are assumed to be so liable to abrasions, the soles of the feet, between the toes, &c. With one exception they were all in lymphatic connection with a bubo.

The exception was the case of a man who presented the remains of what was said to have been a vesicle on the dorsal surface of first right phalanx. It was said to have suppurated and burst. A week after the appearance of the bleb a bubo appeared in the opposite axilla, with fever. I must say here that the history of the sequence of events in these cases is given as accurately as it could be obtained from the people. It is exceedingly difficult to decide the exact time when a bleb appeared, and all one can do is to relate information just as it was elicited by as careful an enquiry as possible. Bacteriological examinations were not practicable.

I will give the notes of each case as I made them at the time.

1 A circumscribed swelling, like a boil, on inner part of right thigh, which started as a pimple a few hours before fever set in. On the summit of the swelling is a bulla. The right femoral glands can be felt, and are slightly tender. The left ones are also tender, but less so than the right, and less easily felt. Died.

2 Bulla on dorsum of right foot, fever set in next day, and right femoral bubo three days later. Recovered.

3 Collapsed bulla on the left side of back, said to have been pricked there, and fever followed in a week. A left axillary bubo appeared three days later, followed by a right axillary bubo. Another account was that the fever set in the day after the bulla appeared. Recovered.

4 A large patch of cellulitis with a ruptured bleb on the summit, exposing the cutis on posterior aspect of right thigh. Bleb said to have appeared two days before fever, right femoral bubo the day after the fever. Right inguinal glands also tender. Result unknown.

5 A large patch of cellulitis, starting from a bleb, over right scapula. Fever set in first, bleb appeared two days later, and right axillary bubo on the fifth day. At the time of my examination several glands were slightly enlarged. Recovered.

6 Healthy ulcer on left lumbar region, result of a pimple, followed next day by fever, and two or three days later by left inguinal bubo. Recovered.

7 Above and to right of umbilicus is an ulcer over large patch of cellulitis, and between this and a left axillary bubo is another swelling, apparently inflammation of a lymphatic. Just above right nipple is an enlarged gland, and then the bubo in the axilla. The history was that a bleb on site of present ulcer, fever, and axillary bubo, all appeared the same day. But enquiry elicited that the bleb was not noticed at first, so the history is probably inaccurate. Recovered.

8 Bleb, the size of a pea, on inner front of left ankle, said to have appeared two days before I saw the case. I doubted this, as the contents of the bleb were of some consistence. Left femoral bubo. Recovered.

9 A large ruptured bulla over front of right ankle, with surrounding cellulitis, and enlarged lymphatics up outer side of leg, said to have begun as a pimple (like a small pox papule, the people said) with fever the same day and a few hours later a right femoral bubo appeared. Died.

10 Pain began in right thigh at night, next morning fever set in, two days later a swelling appeared at site of pain, and on 7th day a bleb appeared on summit of swelling, which is below the region of femoral gland, and like a large boil. Several femoral glands can be felt, and are slightly tender on this side, not on the left. Recovered.

11 At epigastrium is a large sloughing ulcer, and an enlarged inflamed lymphatic leading to right axilla. At anterior fold of axilla, is a small ulcer similar to epigastric one, and the lymphatic between the two looks like breaking down. The epigastric ulcer said to have started as a bleb, caused by the bite of an ant, this was evidently suggested by the patient finding an ant in the bed after noticing the bleb. The same night as the bleb was noticed fever set in, with a red line like the mark of a whip leading from the bleb to the right axilla, where there was a swelling. Later on buboes appeared in left inguinal and femoral and right femoral regions. There were swellings round both ankles. Suffering from meningeal symptoms. Recovered.

12 At outer end of left Poupart's ligament is a large bleb, with a bubo at the inner end of the ligament. Bleb said to have appeared first, two days later fever set in, and a few hours later the bubo, which was exquisitely tender. Died.

13 A large ulcer in mid scapular region, said to have started as a bleb, followed in two days' time by a right axillary bubo. A left axillary bubo appeared, time not known, and about 9th day left femoral bubo appeared. Recovered.

14 Superficial ulcer on left instep with cellulitis began as a pimple which was scratched. Another version was that the pimple came on inner side of sole of foot. Fever came on with the pimple, and three days later left femoral bubo. Recovered.

15 On left calf is a large bleb with skin ruptured and circumscribed cellulitis, began as a pimple which was scratched, and fever followed in two days by left femoral bubo. At time of examination several glands were slightly enlarged. No popliteal bubo. Four days after the onset of fever, a right cervical bubo appeared. Two days before getting ill had his left hand cut by a soda water bottle bursting. Died.

16 Bleb on dorsal aspect of left 1st metatarso-phalangeal joint, appeared with fever, followed in two days by left femoral bubo, which is small and very tender. Another version was that the bubo appeared first, then the bleb. Recovered.

17 Ulcer, healing, over left tuber ischi, began as a pimple followed in three days by left femoral bubo. Recovered.

18 On inner side of left foot near malleolus is a bleb, about size of a 2 anna piece, and over dorsum of foot, and round ankle are a number of discrete vesicles, like those of variola. They are thickest over front of joint, and a few are scattered up front of leg to upper third. The first bleb said to have been caused by a spark of fire. I saw the case on the 24th April, and a medical inspector who saw the case on the 23rd says that at 11 A.M. that day the left femoral bubo existed, but that there was no eruption on the leg. On the 25th some of the vesicles had burst, exuding serum. They seemed to me more papular than vesicular. I am not satisfied with the history of their appearance, but nothing else could be elicited. Died.

19 Small ulcer on outer side of right leg, about 4 inches above external malleolus, began as a pimple, followed in eight days by right inguinal and femoral buboes. History uncertain. Recovered.

20 Large ruptured bleb over left external malleolus, smaller one over tuberosity of left tibia. The former

said to have appeared two days after the left femoral bubo, and the latter later still. A medical inspector saw the bubo and the bleb on external malleolus the same day, and assures me there was then no sign of the one on the tibia. Result unknown.

21 A ruptured bleb on middle of right fore arm with cellulitis, began with pain up the arm to axilla, followed by a pimple, and right axillary bubo two days after. Recovered.

22 A ruptured bleb just above inner side of right patella with some surrounding cellulitis, began two days before fever, which set in with right inguinal and femoral buboes, not large. Recovered.

23 Ruptured bleb just above and to left of umbilicus with surrounding cellulitis. It appeared with fever and left inguinal bubo. Died.

24 This case has already been noted as presenting a bleb on the opposite side to the bubo.

None of these cases presented to view any other lesions or abrasions of the skin, nor was there any history or sign of previous abrasion at the site of the bulla.

In none of the bullae that I saw before rupture, did I notice umbilication. In only three instances was there any lymphangitis, and in those (Nos 7, 9, 11) it was probably due to secondary septic infection through the site of the bulla. Five of the cases (Nos 1, 3, 11, 13, 15) presented multiple buboes, and in none of these was there a lesion in lymphatic communication with more than one bubo.

Fifteen of the 24 lesions were in connection with the lower limb, and only seven in connection with the feet, and then on the dorsum or round the ankles.

I wish to note one or two points about the bullae. In three instances, they were situated on the summit of the buboes (Nos 1, 4, 10), and in one of those (No 20) was said to have appeared seven days after the bubo, in one case (No 12) the bleb was in close proximity to the bubo. In the remaining cases it was situated at a distance. In three cases in which I saw the bulla intact there was no inflammatory action visible round it, but in cases where the bulla had ruptured there was underlying cellulitis or ulceration to a greater or less extent. If the history in case No 20, as to the appearance of bulla subsequently to the bubo be reliable, it is an important observation. Unfortunately there is an "if." In case No 16 also the history of the bubo preceding the bulla is doubtful, but later on I give instances which there is no reason to doubt.

Another point I wish to note is that in five cases (Nos 1, 5, 10, 15, 22) in which the bulla existed with more or less considerable cellulitis, in fact one may say forming the bubo, the affection of the nearest lymphatic glands was markedly slight.

As regards the sequence of symptoms and signs, I may quote from notes I had the honour of submitting to the Society in June 1900—"The bubo either appears some hours after the onset of the fever or there is a history of the bubo being noticed at the time of the onset of the fever and headache."

In other words, there are symptoms of a general blood infection before local manifestations. Regarding the time of appearance of the bulla in the above cases, there is room for doubt. Mostly the histories relate that the pimples or bulla appeared before fever set in, but the initial fever would be very likely to pass unnoticed, and the man to begin his narration from the time he noticed something tangible or had to lie up. In twelve cases the history says the bleb preceded the fever, in four followed the fever, in five they were synchronous, and in three nothing definite could be made out. In fourteen cases it is stated the bulla or papule appeared before the bubo, in three after the bubo, in two at the same time as the bubo, and in five nothing definite can be said.

I think, gentlemen, we may put on one side the statements that almost all plague patients present cuts or abrasions, and also the statement that infection must take place through them when they exist. Skin lesions, which must be considered as a manifestation of the

disease, are said to be infrequent, and record of the actual proportion in a series of cases, and which I am presenting to you, gives a percentage of 10.3 per cent.

Major Evans, M.S., who fell a victim to plague in Calcutta, found skin lesions in four cases out of 98, one of which was a carbuncle on the cheek.

Out of 352 cases treated in hospital at Mauritius in 1899, skin lesions in the shape of bubo or carbuncles were found in fourteen.

Allowing that the lesions noted do represent the points of inoculation, it leaves 90 per cent of cases to be accounted for by assuming infection through the skin. Is that not rather a big assumption? Infection through skin in lymphatic connection with a bubo fails to account for multiple buboes, and cases in which no external bubo is observed.

I am unable to find any record as to whether bacilli are found in buboes where more than one exists, and if they were, it would be against original skin infection, because a bubo in one thigh may be followed very quickly by one in the opposite axilla, or the opposite side of the neck, indeed all sorts of combinations are found, in which there can be no conceivable direct lymphatic communication, the only medium of communication being the blood, in which the bacillus itself is not found till a certain number of hours before death.

In this series of 231 cases, there were multiple buboes in 53, or 27 per cent. There is great variation in the proportion of multiple buboes. In the Bombay Plague Hospital Reports for the years ending May 1900 and 1901, the proportion ranges from 5 per cent to 40 per cent.

As regards the *post mortem* appearances of plague, I cannot do better than refer to the summary of pathological conditions given by Professor (now Sir T.) Fraser, President of the Indian Plague Commission, in App II, Vol V, of their Report.

I have now another point to bring to your notice, the mode of infection in so called primary plague pneumonia.

In some clinical notes on plague, which were kindly read for me before the Society by Dr Moir in June 1900, I strongly protested against the division of plague into types, as being confusing and apt to be misleading, and advocated the use of the comprehensive nomenclature—plague—to cover all manifestations, these latter being dependent on the idiosyncrasies of the patients and the progressive course of the disease. This protest receives support, I think, from what Sir T. Fraser has written in his description of the clinical features of plague in App II, Vol V, page 426 of the Report—

"The intimate relationship which exists between these types of plague is shown by the circumstances that the standard bubonic type, or *Pestis major*, may pass into the septicemic, and in the greatest number of fatal cases actually does so, *that inflammation of the lungs not only appears so conspicuously and early in plague as to become the fundamental condition of the pneumonic type, but also constitutes one of the most frequent of the complications of Pestis minor* (the italics are mine), and that any one type does not reproduce itself only, but also other types, as when the bubonic produces septicemic and pneumonic, when the septicemic produces bubonic and pneumonic, and when the pneumonic produces bubonic and septicemic cases.

"It may also be stated that the occasional predominance of others of the pathogenic effects of the plague virus has led to further subdivisions of the disease, such as the nervous, the abdominal, the gastro enteric, and the dysenteric."

We might as well describe a nephritic type of scarlet fever, because some patients present symptoms of more acute nephritis than others.

I think the most unwarrantable division of plague is into bubonic and septicemic types, if plague with external buboes is not a septicemia, the latter term has no meaning as applied to the disease at all.

In another part of the Indian Plague Commission Report, which affords indications of having been written

by the two celebrated bacteriological experts as apart from the clinician on the Commission, and whom I have just quoted, doubt is thrown on the adequacy of direct inhalation of plague virus into the lungs to account for primary plague pneumonia, for these reasons that this manifestation is rare among disinfectors who are exposed to the inhalation of dust (*N.B.* plague at all has been rare among disinfectors in my experience), and that the proportion of cases of primary plague pneumonia is small compared with the total, and "that the inadequacy of the view that there is a simple inter relation between the introduction of plague infective material of ordinary plague into the lungs and the supervention of plague pneumonia is most clearly established by the fact that we were unable, though we made special enquiries into this matter, to discover any definite instance of primary plague pneumonia having originated from contact with a case of ordinary bubonic plague."

Now, no one knows anything approaching the exact proportion in which these pneumonic cases occur. We know that they end rapidly in death, and such rapid cases are the least likely to find their way to hospitals, and Sir T. Fraser says in his clinical note on the disease that—

"As pneumonic plague has generally been most prevalent during the middle of outbreaks, it may sometimes become an important element in causing the high mortality which occurs at those times."

The President of the Commission in the remarks I have referred to in his pathological summary distinctly states that the so called types all reproduce each other, and mentions specifically the production of primary plague pneumonia from bubonic cases.

In the plague hospital I had at Bangalore, one of the hospital assistants contracted this primary plague pneumonia in the hospital, where no case of that so called type existed at the time. In the midst of a plague epidemic, it would be a notable thing, rather than the contrary, if definite instances of the source of infection were given at all in any class of cases. The fact that it is difficult to elicit such evidence in any infectious disease, combined with the fact that it is allowed that pneumonic plague can produce the bubonic form, seems hardly sufficient warrant to "endeavour to substitute for the theory that there is a simple inter relation between the introduction of plague bacteria into the lungs and the supervention of primary plague pneumonia a more adequate theory."

The suggested more adequate theories are "that possibly there may be something, either in the form, or in the manner, in which the infective material escapes from the body, which favours the conveyance of the infection into the lungs of persons in attendance on cases of plague pneumonia."

That is to say, that sputum either freshly expectorated or desiccated may be the means of transferring the bacillus to the lungs.

Then, it is supposed "there may be something specific in the infective material" which determines the pneumonia. Then, the possibility is suggested that there may be "a difference in point of virulence between the plague bacillus" which determines pneumonia or buboes. Again, it is suggested as possible that the "infective material from a pneumonia case may be associated with some other bacillus which favours its growth and contributes to the production of plague pneumonia, in favour of this would appear to be the fact that, in many cases of plague pneumonia, pneumococci, streptococci, and other pathogenic bacilli, have been found associated with the plague bacillus."

Finally, it is stated that "there can be no question of any specific difference between the plague bacillus which gives origin to pneumonia or bubonic cases."

Opinions may differ as to the adequacy of these theories to explain the manifestations of plague in different patients more satisfactorily than the clinical fact that plague reproduces itself, any modification of

symptoms depending, may be, partly on the quantity of poison taken into the system, but chiefly on the personal equation of the individual

I may say here that the pneumonia in these cases is variously stated as lobar and lobular, some as distinctly saying it to be the one as others say the contrary. The cases I have seen during life presented very clear symptoms of lobar pneumonia.

It appears that the pathological changes in the lungs in primary plague pneumonia are simply more intense than in the inflammation of the lungs occurring later on in the course of the disease. I think there can be no doubt of the unity of type of plague.

I now come to a consideration of the significance of the buboes and skin lesions. The former need not detain us long. A bubo is a sign of general systemic infection, the grave constitutional symptoms which precede development of buboes, or at least are synchronous with their appearance, I think leave no other interpretation possible.

The preponderance of buboes in the inguinal or femoral regions in men who go bare footed seems to have started the idea of skin infection, regardless of the fact to which I have called your attention that the same preponderance obtains in those who do not go bare footed. In a large series of cases reported on in Bombay and Poona, the preponderance of groin buboes was in the right side in the Bombay and on the left in the Poona cases. Therefore presumably the Bombay people had scratches on their right and the Poona folk on their left legs! You remember the order of the frequency of the situation of buboes is in the groin or thigh, axilla, and cervical region, and in all more frequently on the right side.

As skin infection is to my mind totally inadequate to account for this distribution, can any other explanation be offered? I made the suggestion before the Commission that the liability of inguinal and femoral glands to be affected might be due to their greater state of activity. In private conversation afterwards with a member of the Commission he said he thought the theory an eccentric one!

Yet such an idea is not unknown to clinical observation in other spheres of medicine. It is suggested that functional activity of the lumbar spinal cord determines the paresis of the lower limbs in infantile paralysis.

If you do not think the idea too eccentric, I would like to go on with it, and I think the suggestion is supported by the Commission itself, though stated in another way.

They extract the following figures from Vierordt's tables —

Area of skin covering different regions of the body

Head	803	sq	cms
Neck	456	"	"
Trunk	2,491	"	"
Upper extremity	1,998	"	"
Lower " (including pelvis)	5,016	"	"

The Commission then assume that half the lymphatics of the trunk drain into the arm pit, and the other half into the groin, and on this assumption they obtain the following figures for the areas of skin surface in relation with the cervical, axillary and inguinal glands —

Neck receives lymphatics from an area of	1,259	sq	cms
Arm pit	3,244	"	"
Groin	6,261	"	"

giving a ratio of 1 1.8 5. They aggregate the figures from 3 plague hospitals, and find that the cervical, axillary, and inguinal buboes stand to each other as 1 1.3 5.8. From the coincidence between these figures and those representing the relation between the superficial areas of the regions whose lymphatics drain into the respective groups of glands, they draw the inference that the system is invaded, for the most part, not from internal surfaces, but from the skin.

We might pursue figures a little further, and state the number of glands in the respective groups.

The superficial cervical glands are 4—6 in number, the axillary glands are deep and number about 12, and the superficial inguinal 6—12 (Morris' Anatomy). The superficial glands of the upper extremity, as the epitrochlear, are sometimes enlarged alone or in conjunction with the glands in the axilla.

If you take the highest number of glands given in each case, it appears that the inguinal glands have a great deal more work to drain their area than either of the other groups, and the axillary have more than the cervical, though the disproportion is not nearly so great as between the inguinal group and the other, likewise the preponderance of axillary buboes over cervical is not so great as inguinal over both.

I am not convinced that it is more eccentric to attempt to account for the liability of certain glands to become affected over others by the suggestion that physiological activity or hyperæmia may be the determining factor, as seems a reasonable explanation of other morbid conditions as well, than to say that, because the glands of a certain region drain a larger area of skin, therefore those glands must have been infected through the skin, especially as there is no clear evidence of such infection at all. The femoral glands particularly are liable to irritation, and in some persons they are perceptibly larger than in others, and when such (call it physiological) enlargement is not noticed in other regions of the body.

Then again there is a preponderance of axillary buboes in women, which admits of a similar explanation, under physiological stimulation we find the very small tertiary glands enlarged during lactation, and it may well be that the heightened activity of the glands, during gestation and lactation, determines a precipitation, as it were, of the morbid process in cases of plague. There is not the same disparity between the sexes as regards cervical buboes, there is not the same excessive activity in either sex, as accounts for preponderance of groin buboes in men and axillary buboes in women, relatively to those in other regions.

Do you think, gentlemen, there is any great difficulty in supposing that a poison circulating in the blood should select a certain tissue for an early manifestation of its presence in the case of plague, when we see the same thing happening all through medicine? We see cutaneous rashes in the eruptive fevers starting with marked uniformity in certain regions first, the bubonic signs of plague are as indisputably an indication of blood infection as the appearance of the variolous rash is of blood infection in small pox, or the induration of the base of a chancre of systemic infection.

The other clinical signs calling for remark are the skin manifestations. There is no bacteriological or clinical evidence that, whether they assume the form of papules, vesicles or boils, they differ essentially in their nature. The lesions represent simply different stages of the manifestations, as when a papule becomes vesicular, or when a vesicle bursts and the underlying tissues rapidly become gangrenous, sometimes sloughs separating to expose large surfaces of bone. The small spherical vesicle occasionally seen, and which is sometimes said to have appeared before the bubo, has been assumed to be the point of entry of infection. There is no more reason for supposing that this manifestation, when it appears early in the course of the case, indicates the point of infection than when it appears late, and when late they are not always single, but may be the starting points of gangrenous sores in more situations than one. I may quote here cases reported by Dr H. Lorans, M.B., D.P.H. (Edin.), in the history of the plague outbreak in Mauritius, 1899. A girl, aged 9 years, was attacked with plague and, when seen on the second day, had a right femoral and right axillary bubo. A vesicle, resembling a seventh day vaccine vesicle, was observed on the outer aspect of her left arm. Micro

scopically the contents of the vesicle showed plague bacilli. At no period of the illness was there any adenitis in the left axillary or cervical regions. This corroborates Major G. S. Thompson's experience before referred to. In a second case, a woman, there was a vesicle on the left hand, and the first bubo to appear was in the right axilla. There was also a vesicle on the right side of the neck, with a slight swelling at the angle of the right jaw.

In a third case, a child aged one year, six vesicles appeared on the body during the course of the illness.

Dr. Lorans writes—"Vesicles on the whole might not be the primary lesion, but simply a cutaneous manifestation."

The only case of multiple vesicles I can call to mind having seen personally I have already mentioned. I am not prepared to offer an explanation as to why these vesicles should be single, as a rule, when they are observed, many clinical phenomena do not admit of explanation, except perhaps on some theory of disease, and we know the value of that. There is one point worth noting, there is no pathological change in the lymphatic vessels, except that in a few cases they have been found swollen and congested in immediate proximity to the bubo, by evidently extension from the bubo, in which the morbid signs are accounted for, in Sir T. Fraser's opinion, by the vascular changes. I look on these vesicles as much a part of the general blood infection as the buboes, petechiae, hemorrhagic blisters, or any other skin manifestation.

I do not propose to go into the details of a few cases in which plague is said to have been contracted through a *post-mortem* scratch, and which are adduced as evidence of skin infection. The fact of plague being artificially inoculable has no more bearing on the question of the usual mode of spread than small pox, being inoculable has on the spread of that disease, or the fact of scarlet fever having been inoculated by the Germans on the ordinary means of infection in that disease.

The mode of infection that presents fewer difficulties and contradictions is by the respiratory track. In the majority of all cases of plague the lungs are affected, and that too during the acute stage of the disease, and I think the term secondary, as applied to such pulmonary affections, because the patient does not die with symptoms of acute pneumonia and no external bubo in about 48 hours, misleading, and only tends to confuse the unity of the disease, in fact, it has done so.

Respiratory infection supposes aerial convection, and this presents no difficulty. There is abundant evidence of plague flourishing in damp, dark, ill ventilated places. The bacillus is supposed to inhabit the floors of such places, supposing this to be the case, how does it get there? Carried in by the occupants. Where do they get it? From the soil outside, or from another case. Now, if the bacillus exists on the floors inside or the ground outside a hut, it can exist in the dust in such situation, if it can exist in the dust, it can be raised with the dust, whether the latter is either swept or blown up, if swept up from the floor of a hut all the dust will not necessarily settle on the floor again in exactly the same place where it was before, if blown about, the direction taken by the dust will depend on the currents of air, and the distance to which the dust with the incorporated plague bacilli may be carried will depend on the force of the currents and obstructions met with on the way. As the bacillus only reproduces its kind, and as so-called primary plague pneumonia is due to its inhalation from the air, on what grounds can it be maintained that the bacillus causing so-called bubonic plague is not aerial also? Laboratory experiments show that the bacillus is tenacious of vitality, and under artificial conditions very favourable to its devitalisation sometimes requires several hours' exposure to direct sunlight. It has not been shown that diffused light has any devitalising action at all. Now let us go to the slums in Calcutta, and what are the con-

ditions? The central part of the city consists of high houses with narrow streets and alleys, to many of which direct sunlight never penetrates at all, or for very short periods of time, the air is damp and stagnant, the rooms in some of the houses are totally dark in midday, and amongst these houses are collections of huts, also with dark rooms, and the surroundings generally reeking with indescribable filth of all sorts. During the outbreak of this year, the number of plague cases to the population in the four central Wards was as follows—

1 in 41—1 in 86—1 in 58—1 in 69

In the Wards outside these, and which are made up mostly of collections of bustees (i.e., aggregation of single or two storied huts) the proportion was—

1 in 82—1 in 110—1 in 113—1 in 137—1 in 130—1 in '41

The further one got away from the confined space of the centre of the town, the fewer people contracted plague. I think the explanation is reasonable, that in the more open parts of the town the general ventilation is freer and larger areas come under direct sunlight and for longer periods of time, and the virus becomes devitalised in consequence.

Ventilation in an open area affords opportunity for devitalisation of the bacillus by desiccation and exposure to sun, which indeed I think, accounts for the comparatively small incidence of plague among the populations of bustees in more open areas. Ever since I came here, I have thought that the bustee construction of such a large part of Calcutta was the chief cause why plague was less than in other cities, as Bombay, which are not so constructed.

I find this explanation easier of acceptance than that the people of one Ward have skin abrasions to a much greater extent than those in an adjoining one.

Again, plague has been specially prevalent in the grain bustees here, amongst people who grind and sift the grain, and in which process much dust is caused. Whether the bacillus has any connection with grain is unknown, but the connection I have mentioned between grain godowns and the workers is undoubted, and points clearly to infection by inhalation. I believe, though I cannot just now quote the authority, that men employed on disinfecting operations in Hong Kong in 1894 were said to have contracted plague from inhaling the dust raised when they went into the rooms, orders were then issued that the floors should be sprinkled with the disinfectant before the men entered the rooms, no more men contracted plague afterwards. It is a standing order in this country that dust should be laid before men work in a room. The procedure is meaningless unless the virus be aerial. Once the infective material has been carried into a house, and it finds the conditions of dampness, darkness, and foulness of air favourable to its growth, it then often attacks some of the occupants almost simultaneously, or within a few days of each other. The explanation that this is due to the occupants inhaling the poison is easier of acceptance than that all those people had abrasions of skin suitable for inoculation at, or even about, the same time. The irregular way in which cases of plague will occur in a bustee is more easily explainable, I think, by air convection than in any other way, and it also explains cases which occur singly perhaps among Europeans, or Natives living in a good class of house. The patient inhales the virus, or carries it into the house, where it afterwards gains entry to his system, but the virus, which was probably attenuated at the time, does not find a congenial soil for further growth, and no other cases occur. I have seen such cases in people who have had no conceivable connection with a plague case. One occurred here in Calcutta in the person of a prominent citizen, living in one of the best appointed residences in Calcutta, who paid a business visit to Bombay, and shewed signs of plague soon after his arrival there. No other case occurred in the house here on his return. Colonel W. McConaghey, I.M.S., records the case of an European

newspaper editor, who lived in an uninfected part of Poona, and not having been otherwise in contact with plague, who developed the disease 24 hours after going round with a search party in plague infected houses. Cases of this nature have been recorded in sufficient numbers to warrant the conclusion that the disease is contracted in the same way by people living in a badly plague infected quarter, under conditions most favourable to the vitality of the virus and to its inhalation in the foul air. We know how impossible it is to trace connection between the majority of cases in an epidemic of the commoner infectious fevers, and naturally so in any air borne infection, because many people are infected who have not been within even an imaginable striking distance of a previous case, and by exclusion, contact with the specific virus in the air becomes the only conclusion possible, and it is the conclusion which satisfies the conditions most fully, and affords the most rational explanation of observed facts. I am only applying this to the spread of plague in a more or less limited area—as in a town. I do not intend to attempt to account for the introduction of infection into a place 1,600 miles distant by air convection, that can often be traced with a great measure of probability to human conveyance, and in cases where no trace can be discovered of the source of infection it is a wise thing to say "I do not know."

Let me summarise the views I have tried to place before you.

Careful examination shows that a very small proportion of natives display cuts and abrasions, not more than would probably be found in any large community.

When abrasions are found in a patient suffering from plague, there is an entire absence of any sign to render it probable that they were the points of inoculation.

In a comparatively small proportion of plague cases skin lesions are observed, which, when appearing early in the course of the disease, are assumed to be points of entry of the virus, but the evidence of such a mode of infection is unsatisfactory, and the skin manifestations can be more satisfactorily accounted for by considering them as evidence of general blood infection.

Plague is contracted by inhalation of the virus, and the different symptoms presented by different patients depend on the individual constitutions mostly, but may partly be due to the quantity of virus absorbed. Infection through the respiratory organs is borne out by the course taken by the disease, and its virulence in damp dark places, void of ventilation.

AN ANALYSIS OF ONE THOUSAND CONSECUTIVE CATARACT EXTRACTIONS

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(Continued from p. 43)

OPERATION

Incision—A purely corneal incision was used in the vast majority of the cases (948). It lay in a plane parallel and well anterior to the iris. It occupied nearly half the corneal circumference and, with a conjunctival flap, which was made in 609 cases, this is not dangerous to the nutrition of the cornea. In order to combine a conjunctival flap with a purely corneal incision, the knife edge has to be turned towards the sclera just before completing the incision. With a firmly adherent thin tough conjunctiva it is more difficult to make than with a thick loose

membrane. Modified linear incisions through the sclero-corneal junction were made in 21 cases, the 3 mm flap (Swanzy) in 28 cases, and scleral extraction in three cases. The percentage of iris and vitreous prolapses in the four kinds of incision were corneal, 6.2 and 10.01 per cent, modified linear, 14.3 and 4.8 per cent, 3 mm flap, 7.1 and 21.4 per cent. In the three scleral extractions neither occurred. These figures support the view generally held that purely corneal incisions are less often followed by prolapse of the iris. Vitreous prolapse does not depend upon the seat of incision. **Conjunctival flaps** were made in 609 cases. Bleeding was met with in 128 of these, with 119 good, six indifferent and three bad results—not in any way due to the bleeding. If adrenalin solution is used, bleeding does not occur, though it was not generally used in this series unless injection of the eye led one to expect bleeding.

Thirteen of the flaps were sutured with fine silk. This was given up because the suture appeared to set up conjunctivitis, and the advantages gained were not sufficient to counterbalance this risk.

The advantages of making conjunctival flaps are the rapid healing of the wound shutting it off from septic infection, the better nutrition of the cornea enabling one to make larger corneal incisions when necessary, the lesser degree of astigmatism that results, and the impossibility of epithelial involution occurring in the wound with its resulting weak cicatrix. Against these advantages the occurrence of bleeding and the difficulty there is in making flaps do not weigh very heavily.

Iridectomy—In 631 cases iridectomy was performed. In 369 it was not. The 631 iridectomies gave 89.6 per cent good, 5.7 per cent indifferent, and 4.2 per cent bad results. The simple extractions gave 89.1 per cent good, 5.4 per cent indifferent and 5.14 per cent bad results. Iris prolapsed in 3.15 per cent of the iridectomies and in 10.3 per cent of the simple extractions. Vitreous prolapsed in 8.23 per cent of the iridectomies and in 10.84 per cent of the simple extractions. Iritis occurred in 5.07 per cent of the former and in 5.42 per cent of the latter. These figures show that prolapse of iris is more than three times as frequent in simple extractions as after iridectomy. Iritis and prolapse of vitreous occur oftener after simple extraction also. These worse results after simple extraction were met with in spite of the fact that only the most favourable cases were extracted without iridectomy and that when any complication was present or arose during the operation, an iridectomy was at once performed, such cases consequently passed into the list of those iridectomised. The cosmetic objection to iridectomy is groundless. With a blue iris it is generally impossible to 'spot' an iridectomy upwards until the upper lid is raised,

and in a brown iris this is still more the case. The advantages of iridectomy are that it enables large lenses to be removed with less bruising of the iris and with more capsule and cortex adhering, that it lessens the likelihood of prolapse of iris partly by there being less bruising of it, and partly by providing a sluice for aqueous to escape through in case of the wound reopening from any cause. As the capsule and cortex are better removed, sight is better and secondary operations are less often necessary after iridectomy.

Capsulotomy—The capsule was opened by a sharp cystitome. It was generally opened at the lower margin (G Hall), and then, if possible, the capsule was opened all round just inside the pupillary margin, so that most of the anterior capsule came away with the lens. By dilating the pupil widely beforehand a larger area of capsule became removable, and less of capsule and cortex remained behind to form secondary cataract and require dissection.

Sixty-eight cataracts were removed in their capsules. Thirty-three or nearly half were followed by prolapse of vitreous. Only 51 such prolapses were met with in the whole thousand extractions, so that about two-thirds of them were met with in extraction of the lens in its capsule. Twenty-two of the lenses so removed were overripe. Sixty-one gave good results, three indifferent, and four bad. No lens was removed in its capsule unless its capsule proved very tough and the lens bulged into the wound in it. The lens was removed in its very tough capsule followed by vitreous prolapse in the eye, which was lost from retinal detachment.

AFTER-TREATMENT

Irrigation was not done as a rule after operation, only just before. If done after, sterile saline solution was used. Irrigation after extraction is unnecessary and may cause harm from causing the patient to screw up his eyes. Any blood or cortex was wiped away with wool soaked in weak sublimate or bin-iodide solution. The introduction of instruments into the anterior chamber 'fishing' for cortex or capsule is strongly to be deprecated. *Iodoform* was dusted along the lids in 808 cases with 90.4 per cent good and 3.8 bad results. When it was not used, the bad results amounted to over 10 per cent. This result in the larger series confirms my earlier figures, viz., that *iodoform* is valuable in preventing sepsis in spite of all that has been said against it.

Bandaging—Roller bandages were always used. With the object of preventing patients from opening their bandages to see if they can see. The operated eye alone was bandaged in cases where there was some vision in the other eye. This was done in 643 cases with good results and no ill-effects that could be attributed to the practice. Both eyes were bandaged in 357 cases. One had

no bandage because he suffered from trachoma, and without any bandage the mucus, which treatment failed to stop, could escape easily and not remain pent up in contact with the wound. His eye did well.

The bandage was removed the following morning always, and daily after, for inspection of the eye. If pain occurred it was opened the same evening. Atropin was applied after operation, again the next morning, when the pupil was often found to have contracted again, and not afterwards unless specially indicated. Eserin was used after sixteen of the earlier operations but only once after. Twice after eserin vomiting came on and the eyes were lost from intraocular hæmorrhage. The Revd Dr Kennedy, of the Dublin University Mission, first told me that eserin instillation sometimes caused vomiting, and that he had had similar cases. I never use it now for this reason and for others to be given later on.

Length of stay in hospital—As many patients did not stay as long as they ought, the figures regarding this need not be given. It is remarkable that in 46 patients (in out-of-the-way uncivilised places) who did not remain in hospital more than a few hours and who then attended daily, there were not more than four bad and seven indifferent results.

COMPLICATIONS

Hæmorrhage—Bleeding occurred 128 times from 609 conjunctival flaps without any bad result due to it. Adrenalin solution stops it or prevents it satisfactorily.

The cut iris in the 631 iridectomies bled 109 times, the result being good in 108 cases and indifferent in one case.

Involuntary iridectomy was performed 69 times. Careful notes were not kept of the 27 that occurred in the first 300 cases, but they were of the 42 in the last 700. Want of experience has been alleged as a cause. The numbers in each successive hundred were 7, 18, 2, 9, 7, 2, 5, 5, 4, 10.

In the 42 observations the size of the pupil was large (i.e., 6 mm or more) in 30, and small (less than 6 mm) in 6. The anterior chamber was shallow in 7, deep in 11, and normal in 24. The aqueous escaped early in 29 out of the 42. It also escaped early in 11 other cases, in which the iris was not cut. Therefore the iris was cut 29 times out of 40 (29+11) cases, in which the aqueous escaped early, and it was cut 13 times (42-29), in all the remaining cases, in which the aqueous did not escape early, i.e., in 660 cases (700-40). In other words, the iris was cut in 68.5 per cent of the cases when the aqueous escaped early, and in only 19.7 per cent of those when it did not. In my own mind there is no doubt whatever that early escape of aqueous is the cause of involuntary iridectomy. Its escape is due usually either to the patient screwing up

his eye and so tilting the knife, or to the surgeon doing this by raising or lowering the handle unduly while making the section or to his pressing on the globe with the fixation forceps. An important detail also is to complete the puncture and counter-puncture *before* beginning to make the section, and then to complete the section without any halting or tilting of the knife. The accident is more likely to happen with deep set eyes and with small palpebral fissures.

The section was completed and the cut piece of iris removed. If at all large and not up to the pupillary margin an iridectomy was then performed to avoid leaving the patient with a double pupil. No harm resulted from the accident.

Too small an incision for the lens to be removed through was made in 25 cases. It was enlarged with scissors without difficulty.

Iritic adhesions to the anterior capsule were met with in 79 cases, of which 68 gave good, six indifferent, and five bad results. The bad results were not due to the complication though some of the indifferent were. It makes the operation more difficult, and lessens the chances of good sight.

The cornea became concave after extraction in 112 cases without affecting the ultimate result. It seemed generally due to the rigidity of the sclerotic, though in some cases the cornea may have been abnormally thin. The average age of the cases in which it was met with was 56, whereas the average age of the whole of the patients was 53.

Corneal haziness, believed to be due to the mercurial lotion used, was met with in 44 cases. It cleared up in all. In 12 cases *striped keratitis* was present and seemed to be due to damage of Descemet's membrane from the passage of a large lens. It cleared up well.

Prolapse of iris occurred in 58 cases or in 5.8 per cent, of the extractions. After iridectomy, 3.15 per cent occurred, and after simple extraction 10.3 per cent or more than three times as many. The dependence of prolapsed iris upon the kind of incision, and upon iridectomy or the absence of it, has been dwelt upon already under the headings '*incision*' and '*iridectomy*'. Some other points which bear upon this question may be mentioned here. Bruising of the iris is an important cause of prolapse. It results from disparity in the size of the incision and of the lens. A large lens passing through an average incision or an average lens through a small incision bruises and stretches the iris, and so renders it flabby and less contractile. The size of the pupil is also of importance, as a lens is easier to extract through a large than through a small pupil. Prolapse results generally from there being insufficient provision for free escape of aqueous humour from the posterior chamber in case of sudden effort on the part of the patient re-opening the wound. Iridectomy

provides a sluice for the aqueous to pass from the posterior to the anterior chamber without pushing the iris in front of it. Atropin used before operation has somewhat the same effect, only it provides a circular instead of a radial sluice. The larger the pupil the freer the communication between the anterior and posterior chambers. The two chambers are in fact almost thrown into one. Atropin moreover prevents prolapse in my opinion, because it stimulates the radiating fibres of the dilator pupillæ. These exert radial traction upon the pupillary margin of the iris in every meridian. The pupillary margin thus being held taut, prolapse of it in any one direction is rendered more difficult. An iridectomy does not abolish this action, as the working of the radiating fibres is not interfered with by division of the sphincter. The reasons for believing atropin to act by stimulating the radiating rather than by paralyzing the circular fibres of the iris, are (1) in paralytic mydriasis from lesion of the third nerve instillation of atropin dilates the pupil still more. The sphincter fibres are already completely paralysed, and vaso-constriction will hardly explain this effect, (2) dilatation of the pupil by atropin in cases where posterior synechiæ exist is evidently an active dilatation and not a passive relaxation, (3) during cataract extraction where the pupil has been thoroughly well dilated by atropin, the pupil contracts on completing the section as the aqueous humour escapes, and again after the lens has been extracted. If the sphincter were paralysed, this reflex contraction of it could not take place, (4) after a narrow optical iridectomy the pillars of the coloboma frequently remain close together until atropin is instilled, when they rapidly separate and form a large pupil. Here the sphincter has been actually cut across without any dilatation occurring, yet atropin at once produces that effect, evidently by stimulating the radiating fibres.

Eserin has the opposite effect of atropin. It makes the performance of simple or combined extraction more difficult, and as the pupil must be made large enough for the lens to pass through, it is not easy to see how eserine can do any good before or during the operation. Used afterwards it may possibly be of use after simple extraction where the sphincter remains contractile, though here, I believe, atropin acts better in preventing prolapse in the manner already described, while the danger of eserine setting up nitis and vomiting is real.

Prolapse of vitreous occurred 92 times or in 9.2 per cent, 33 occurred in cases where the lens was removed in its capsule, 52 prolapses followed iridectomy and 40 simple extraction, 28 occurred before the lens was extracted and 64 after. The lens was overripe in 22.

Intraocular hæmorrhage was met with in seven cases, or 0.7 per cent. Five of the eyes

were lost and in two some sight remained. Two of the eyes were glaucomatous, and after completing the nipectomy, which alone was intended the lens bulged into the wound and had to be removed, followed by vitreous and subsequently by hæmorrhage. Of the remaining five, one had T—1 and paralysis agitans, one had unripe cataract, and the eye received an injury the day after operation which caused the bleeding. Two had vomiting caused apparently by eserine and the fifth lost vitreous at the operation.

Discussion was performed after 33 extractions. The number would have been greater had more patients been willing to stay in hospital and submit to it. It was generally done about ten days after extraction, *i.e.*, as soon as it seemed probable that no more cortex would be absorbed and that the wound was firmly healed.

Extraction in lunatics was performed on four eyes in three individuals. One woman had both eyes done, one under chloroform with nipectomy, the other some years after with nipectomy under cocaine. Vitreous prolapsed in the latter. Both eyes did well. There was some improvement in her mental condition. Suppuration followed extraction with nipectomy under chloroform in another male lunatic. He became unwell after operation and opened his dressings. The fourth was done without nipectomy in an unwell man under cocaine. He had prolapse of the iris, but did well and obtained good sight. His mind improved somewhat.

Erythropsia followed extraction in three cases, but gradually disappeared.

NOTES ON THE ORIGIN OF THE PRESIDENCY GENERAL HOSPITAL, CALCUTTA

BY D. M. MOIR, A.M., M.D.,

MAJOR, I.M.S.

(Concluded from p. 53, February 1903.)

IV—Mr. Kiernander's difficulties

To accomplish the task he had set himself in the stipulated time Mr. Kiernander had to overcome many and great difficulties, which entailed the exercise of a Job-like patience, supplemented by an unconquerable will.

First, his partner in the contract withdrew and left him in the lurch, as we learn from the following extract:—"That tho' Mr. Bantot has declined taking a part in the additional buildings,² he will³ singly keep firm to the joint proposal first entered in."

Next, owing to the prolonged negotiations on the part of the Council and of the Committee of Works, so much valuable time had been lost that but little remained for brick-making before the

rains set in, consequently building operations would be delayed until the commencement of the succeeding cold weather. "Read the letter from Mr. Kiernander to the Committee of Works wherein he begs leave to remark that when he gave in his proposals for undertaking the additional buildings, he grounded his calculations upon his soon being able to make a sufficient quantity of bricks to supply the Works during the rainy season, but as above a month and a half is elapsed since that period, and little time now remains for making bricks, he will not have a sufficient quantity of that article to carry on the works which must of course be at a stand until the rains are over, and by that means render it more difficult for him to finish them within the stipulated time of two years. That his living in the house being made uncertain, whereby he might have had a constant eye over the workmen it will make a considerable difference to him, as they will not be so diligent as they otherwise would."⁴

This third point, however, cannot fairly be claimed in Mr. Kiernander's favour. The Company had purchased his house outright, and had paid for it promptly. From the outset they had refused his request to reside in the house until the end of the contract, and they had made it perfectly clear that his stay there was a concession terminable whenever it suited the Company to occupy their own property for any purpose.

From the Consultation of the 4th May 1772,⁵ we get a good idea of Mr. Kiernander's other embarrassments. The proceedings contain a very long petition from him, with copies of numerous letters to substantiate his statements. He laid particular stress on three more annoying obstacles which seriously hampered his work. "But in regard to the other particulars, of my coolies and workmen being pressed to work in the New Fort, the slow delivery and sometimes an entire absence of Chunam, the delay in payment of the third and fourth advance of money, contrary to the conditions of the contract, is, what will clearly appear from the following

On the 18th July 1769, Mr. Kiernander wrote as follows to Mr. William Harwood, Clerk of the Hon'ble Committee of Works—"Enclosed I send my bill for the third advance for the hospital, and beg the favour it may be signed. I should also be glad to have the ground lines for the foundation of the second office, which is intended for a cook-room, measured out, as soon as ever it is convenient to the Civil Architect, that I may begin with it the sooner the better.

"As I have often, to my loss, and to the hinderance in the work had coolies and other workmen pressed to New Fort, and now my distant situation from the work, causes many other delays, I request it as a favour, that the

¹ Public Proceedings, Consultation of 25th April, 1768.
² *i.e.* the conversion of the Garden House and the construction of the East and West Blocks.
³ Mr. Kiernander.

⁴ Public Proceedings, Consultation of 16th May 1768.
⁵ Public Proceedings, Volume for January to June 1772. Mr. Kiernander's petition is dated the 1st May 1772.

Hon'ble the Committee of Works would grant protection to those people who are employed at the hospital, that in particular, the Duffedars from the New Fort may not at their pleasure press away my people"

At the capture of Calcutta in 1756 many buildings were destroyed, and for a considerable time afterwards much reconstruction work was required both by private individuals as well as by the Company. It was considered urgently necessary to repair the defences of the town and fort, but masons, carpenters and coolies were not obtainable in sufficient numbers, owing to the higher rates of wages paid by private persons. Accordingly the Board was obliged to pass an order making it lawful to take artisans and labourers from private enterprises for the defensive works. Apparently this order had not been rescinded in 1772, so the "Duffedars from the New Fort" were acting quite within their rights, however unjust or inconvenient their proceedings may have appeared to individuals.

Mr Kiernander again addressed the same on the 31d August 1769—"As I have not yet been favoured with an answer to my last of July 18th I suppose the Civil Architect is much taken up with other works, and will, therefore, if he does not come, at the beginning of next week, myself measure and work out the foundation for the second office, which is designed for a kitchen. And in regard to my *Bill drawn for the third advance* I had expected that the payment would have been ordered, as I have already not only finished the second story on both wings, which is the condition of the contract for paying the third advance, but also brought up the third story on the West Wing even with the height of the door window frames, and will next week begin to make the arches. I beg to be favoured with your answer and am," &c

On the 10th August 1769, he showed his righteous indignation at the silent indifference with which his letters were treated by adopting a more formal style—

"Mr Kiernander presents his compliments to Mr Hairwood and begs he would be so good and gett his *Bill for the Third Advance for building the New Hospital signed*, as he has an absolute occasion for it"

Again he returned to the charge on the 16th August 1769, with the following letter—

"I find myself at present in such circumstances relating to the contract for building the New Hospitals as I judge necessary should be laid before the Hon'ble the Committee of Works"

"On the 8th day of July I had finished the second story on both the wings which in the contract is the condition of having the third payment advanced me. However I did not draw the Bill for it till the 18th when I had already the door and window frames for the third story of the West Wing and notwithstanding till this

day I have received no order for the payment of the said Third Advance. I have yet gone on with the work, and brought up the said third story as far as almost now to have finished all the arches over the doors and windows

"And as now no Chunam is to be had as you'll please to observe by Mr Lacam's Chitt of yesterday's date hereby inclosed, I am at a stand with the work. I made my indent for 1,000 mds Chunam on the 4th of the month, whilst I had yet somewhat in store, but as upon this indent, I have since received no more than 175 Maunds, all is worked up. Now besides the loss of time, another very great inconvenience is, that I must either keep my Bricklayers in pay, without employing them, or if I dismiss them, and they engage in other service, how difficult will it be for me to gett them back, when I want them

"And from these circumstances it will appear, that the delay in the work does not proceed from any neglect of mine, and beg that these circumstances will be taken into consideration. Please to favour me with a line, acknowledging the receipt of this, and you will oblige," &c

Mr Lacam merely stated that there was no Chunam available, and that some would be supplied from the first boat that arrived. This supply of lime might possibly have come from Bankura which was the nearest available source, via the Dhalkisor and Rupnaram rivers, because Bankura was ceded to the Company in 1760, and because the Dhalkisor was navigable for native craft during the rainy season, at which time Mr Lacam's note was written—15th August. But it is also possible that the lime referred to was Sylhet lime, and came from the Khasi and Jaintia Hills, which contain inexhaustible beds of limestone. Sir W W Hunter states that "from time immemorial a large part of the supply of Bengal has been derived from this source"

On the 24th August 1769, Mr Kiernander once more addressed Mr Hairwood—"Being informed that now Chunam is arrived and that probably to-day some may be delivered to me I should now be able to collect my people again, and sett about to continue the work at the New Hospital, if I was but supplied with money. But as the Treasury Banyan has not yet paid the Third Advance, nor any part of it, and by what he saith is very likely will not for some time longer, I am under necessity to request you would represent this to the Hon'ble the Committee of Works, and procure their orders for this payment, as without money it is impossible for me to forward the work. I wait your answer and am," &c

In his representation to the Council Mr Kiernander goes on to state—Aug 31 Upon this I

was told that orders were given to the Treasury Banyan, but he pretended not to have any cash and I wait till August 31st when I received a small sum in part

"Sept 9th Another small sum in part

"Sept 15th Another do do

"Sept 21st The remaining Balance of the Third Advance

"By this long delay of Delivery of Chunam and want of Cash, the whole work was at a stand a considerable time

"The Fourth and last advance of Money was also protracted near a whole month after it was due by contract"

It would seem that Mr Kiernander did not appreciate, or did not approve of the practice of *bakshish*, otherwise the banyan's payments and the delivery of lime might have been more prompt

Apparently Mr Palmer took the place of Mr Harwood as Clerk to the Committee of Works for the next two letters were addressed to him. The first bore the date of the 15th December 1769 —

"The whole of the New Hospital being covered in, I have agreeably to the Tenor of the Contract drawn my Bill for the last advance and beg you will present it to the Hon'ble the Committee of Works, for to obtain their order for the payment having now an immediate want of it"

The second letter was dated the 8th January, 1770 "Having had no answer as yet to the contents of my last Letter, nor received order for the payment of the last advance for the Hospital buildings, for which I send you a bill dated the 15th December last"

"I now beg leave to inform you that having advanced a considerable sum of my own cash for the advancing of the said building much further than the contract obliges me, I being out of cash, can proceed no further till payment is made and am very sorry that now a second time the work must be at an entire stop"

He continued to the Council — "13th January, 1770 I at last received payment of the fourth and last advance, and then began the work again No 2 The last indent I made for 300 maunds of Chunam on 25th April 1770 signed by the Store keeper Francis Hare, Esq, is laid hereby in original but was never delivered and marked No 2

Then follows a letter to Mr Hare, dated the 3rd May, 1770 — "The indent I made April 25th for 300 maunds of Chunam, you have been pleased to sign and order the delivery, but as yet I have not received any, and am told to day from the New Fort that none can be spared, being to-day the sixth day that the works at the New Hospital for want of Chunam is entirely at a stand, such stopping and delaying the work, is of the greatest prejudice to me, and in this manner shall not be able to finish my work, within the limited time of the contract As I

fancy 300 mds of Chunam will be all I shall want for to finish the whole, if you give me leave to procure that quantity myself, I will do my best endeavours towards getting it, if possible that so I may finish my work, which I shall be glad to be discharged from in due time"

On the same day Mr Hare replied that if Mr Kiernander will tell his Sircar where the Chunam can be purchased he will pass immediate orders for its delivery at the Hospital Mr Kiernander's rejoinder was — "No 3, 5th May, 1770 I have agreeable to your request made an inquiry for chunam, and find that a chunam Merchant Pawnsloo has got about 300 mds of good Chunam at Bahlighott, he asks 75 A Rs per 100 maunds and a Permitt Chitt"

On the 7th May, 1770, Mr Kiernander wrote in despair to Mr Hare as follows — "I am this day informed that your Cicar, contrary to your order has carried those 300 mds, Chunam to the New Fort, of which agreeably to your request, I gave you information some days ago, and I have not yet got any for the Hospital Work And he sends me word of such contents, that I cannot mention to you now The prejudice and loss it is to me, that the Hospital Work is now so long at an entire stand, you cannot but be sensible of Sorry I am, that being now come so near to an end with the work, which I had hopes of finishing a month before the limits of my contract was at an end I must now find myself thus Disappointed and ill used"

He then resumed his petition — "After this I waited still several days, but I waited in vain for Chunam, and I waited in vain for a further answer

"Upon this I resolved to take my own Chunam from the Church, for to compleat the Hospital The first House, or Center Building was delivered up and taken possession of June 20th, 1769, being 12 Months less 7 Days before the Limited time of the Contract The West Wing was begun to be inhabited by the sick people, April 2nd, 1770, and the East Wing on June 2nd by the new recruits June 13th, 1770, was the last day of my two years' contract

"I will allow that Chunam was sometimes scarce, and that perhaps there was sometime no money in the treasury Nevertheless the hinderance and prejudice to me in the work was equally the same, and I had reasonably expected, that these things should so much the more have Hon'ble the President and Council, to allow all those from the beginning mentioned particulars their due weight And although the Hon'ble Harry Verelst, Esqre then Governor, when that promise was given me, was no more in India, yet I never doubted but what such a public and solemn engagement

and promise by the Hon'ble the President and Council, would at all times, and by the Hon'ble Successors be of equal force I will also leave it to the equitable consideration of the Hon'ble the President and Council, whether the interest of 6 per cent upon the mentioned sum which I have advanced of my own cash is not justly due to me from June 13th, 1770

I remain with esteem,
Hon'ble Sir and Sirs,
Your Honor's most obedient and
most humble servant,

JOHN ZACK KIERNANDER "

At the Consultation of the 4th May, 1772 there was a new Board that 'knew not' Zachariah The President was now the Hon'ble Warren Hastings, and only Mr William Aldersey remained of the old members The others were Messrs Philip M Dacies, Thomas Lane, Richard Barwell, James Harris, James Laurell, Henry Goodwin and John Graham They sent a long letter in reply bearing the same date through their Secretary, Mr W Wynne, from which the following extracts are quoted —

"They are of opinion you have not produced any proofs which may be looked upon as authentic they not appearing to stand upon record excepting your assertion of the promise given you by the Board * * *

As from these circumstances it appears to the Board that your claim for a compensation for removing from the house before the contract was expired is void of right, they cannot allow it any force but must reject it, and as you made no application to the Board at the time concerning the want of materials and the late payment of your bills, they cannot now be admitted when not a member of the then Board is at present in Bengal as this is the Board's final resolution and answer, they can only repeat it in reply to any further applications on this subject"

A Struggle of Hospital Practice.

COLD WATER *VERSUS* DRUGS

BY W G PRIDMORE,

CAPTAIN, I M.S.,

Civil Surgeon, Bhamo, Upper Burma

THAT the therapeutic value of the cold bath is not properly appreciated, at least by medical subordinates, is a fact that will not, I think, be denied

Is it sufficiently impressed on them in the schools? Or cannot they rid themselves of their national prejudice against cold water in cases of fever? Or is it because this method of

treatment necessitates a little trouble? It is certainly easier to order drugs, which can be administered by a compounder, or ward servant, than to superintend the bathing of a patient. So long as drugs are being poured down the throats of his patients, the average Hospital Assistant (and I am not sure that European medicals can all be exempted) is satisfied and bestows little thought on feeding or bathing

After a sojourn in the Katha District, the most malarious in Burma, I had a sharp attack of fever. One evening my temperature rose to 106°. My head was splitting, and I felt on fire. I crawled into the bath-room, lay on a folded blanket on the floor, and got an attendant to pour cold water over me.

In an hour or thereabouts my temperature was down (without drugs). I went back to bed and fell into a sound sleep. My temperature rose once more. The bathing was repeated, and there was no further rise. A European was admitted with malaria into one of the largest hospitals in Burma with a temperature of 107°. Here was a case, in which, to wait for the action of drugs, would be fatal.

I happened to be in the hospital, though not in charge, and said to the Assistant Surgeon as the Civil Surgeon, was absent "Why don't you bathe him?" But there were various obstacles in the way, he said, "bath not available, &c." The patient's temperature rose still higher, and he died that night.

I could refer to similar experiences and feel convinced that many lives are lost in this way, which might otherwise be saved.

It is hardly necessary to quote authorities such as Cayley, Manson and others who highly advocate this method of treatment in enteric and malaria, and one feels diffident in bringing to notice what should be an every-day occurrence. Sir William Broadbent says "The great danger is the prolonged high temperature. The continued administration of drugs of the antifebrile class is often disastrous. The most trustworthy means of controlling the temperature is cold bathing. It is of the greatest importance that this be done early, so that the fever may never get the upper hand. No patient should be deprived of the chance which is afforded by the bath, when, at any stage of disease, life is threatened by the consequences of high fever, such as violent excitement, sleeplessness or nervous prostration. Its efficacy, first established in high temperatures of acute rheumatism and enteric, has been proved also in cases of septic hyperpyrexia after ovariectomy and even in injuries to the brain."

Professor Whitla, 1892, speaking of typhoid fever, says "Taking all the different reports from favourable and unfavourable reporters, one is safe in saying that the routine employment of cold bathing has diminished the mortality at least 50 per cent."

Buch, of Calcutta University, with his wide range of experience in India, says "By far the most efficient means for counteracting the danger of prolonged or high fever, is the use of the cold bath which should be fearlessly resorted to

"In all cases of pressing emergency the water should be as cold as it is possible to obtain it, in hot weather, the addition of ice is useful. The bath should be deep, the patient immersed up to his neck, and there detained for about ten minutes or until the occurrence of shivering. After a few hours—four, six, eight or ten—the heat may possibly rise again to a threatening point. What is to be done? Repeat the bath without hesitation, in exactly the same manner as before. A repetition, even several times within the 24 hours, is quite admissible and often very necessary. It may be desirable to prolong its duration 15 or 20 minutes. This may safely be done, and the effect will be of longer duration.

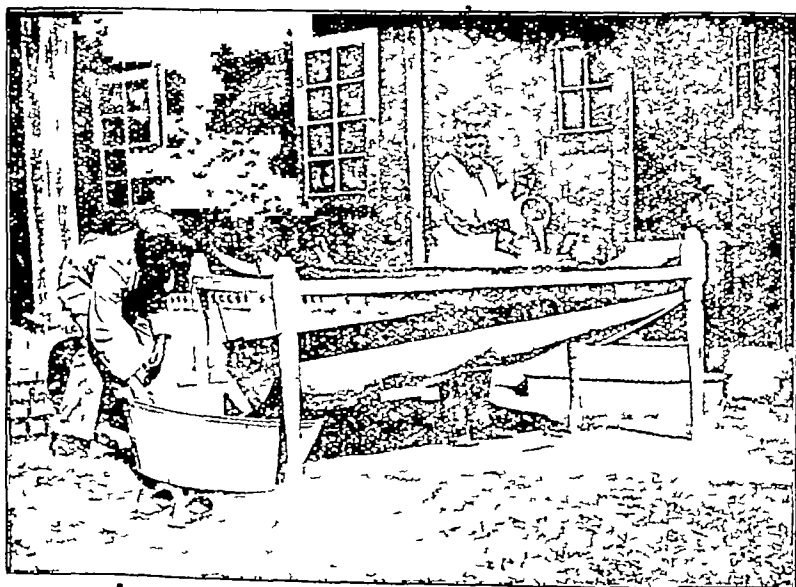
"I have fully thus entered into details because I know that I am treading upon prejudiced ground in urging this advice. Native opinion, especially, is so vehement against either cold water, or fresh air, in cases of this sort. I have invariably had to do the thing myself in the first instance. When mere directions are trusted to, it will be found that some excuse for non-performance is often urged, or a mere pretence gone through, with the object of justifying a prevarication to the conscience and the doctor."

of moisture begin to show themselves, a blanket may be drawn over the patient, and more clothing added as perspiration increases."

A few years ago, I, myself, unfortunately happened to be a patient in one of the hospitals in Burma. Mine was a case of enteric, and when the Civil Surgeon ordered cold bathing, what a stir there was! No bath was available in the building. One was eventually borrowed. The manner in which I was mauled and scragged in order to be immersed in that bath is painfully vivid even now.

The nurse (my wife), to spare me further distress and to avoid the necessity of moving me from my bed, devised a plan of applying the bathing which answers the same purpose as immersion in a bath and does away with the unscientific lifting by native attendants. Its merits, I am sure, have only to be known to be appreciated. A Burmese grass mat (this can be dispensed with, but is comfortable to lie on) was placed over the webbing of an ordinary chairpoy, and I, naked with the exception of a sheet, was placed upon it. A strip of oilcloth, which lay upon the floor, was taken up and attached underneath the bed and made to act as a sloping trough to conduct the water to a foot-bath at the end of the bed. A pillow for my head was wrapped round by a piece of water proof sheeting.

When the fever reached 102° my nurse took up water from the foot-bath with a bucket and poured it over me from head to foot in a



A CONVENIENT SUBSTITUTE FOR THE BATH.

One Hospital Assistant is engaged in pouring water over the patient, the other is lading water out of the bath at the foot of the bed.

"Severe bowel hæmorrhage, puffiness of the abdomen or extremely feeble pulse are the only contra-indications against the use of the cold bath.

"Don't heap on the bed-clothes, it does not hasten on the perspiration in the least, and only adds to the dangers of excessive heat. As signs

of good steady stream. I was occasionally turned on my sides so as to ensure the water cooling all parts of the body.

She did this single-handed, and thus removed all necessity for the crowd of native servants, &c, which had been summoned to get me into the bath.

The shock of sudden cold was avoided by beginning with tepid water and gradually reducing it by ice. The same water was used several times. What torture this new method spared me! I often dozed while it was in progress. After half an hour the wet sheet was replaced by a dry one, and I lay *where I was* on the damp cool grass mat. Indeed, this was my only bed for the remaining three weeks, or until all fear of further fever had gone. If necessary, a blanket could be slipped under the patient between each bath, but I never felt the need of it.

The trough in the illustration is made of a couple of mosquito curtain poles and a macintosh sheet folded round them and secured by string passed through the eyelet-holes. These appliances are as easily secured as the chappoy. It must be borne in mind that a good volume of water is necessary to be of service. A feeble trickle is useless. No mattress is required.

My reasons for contributing this article are to plead for a more extensive and general use of cold water in pyrexia and hyperpyrexia and to bring forward this easy and convenient method of applying the treatment.

ENTERIC FEVER IN GOORKHAS WITH A FEW REMARKS AS TO ITS PRO- PAGATION AND DIFFERENTIAL DIAGNOSIS IN THE EARLY STAGE

By R. McCARRISON, M.B., B.Ch.,

Lieut. I.M.S.,

M.O., 2/4 Goorkha Rifles

A FEW remarks, as to the conditions of life and habits of the Goorkha soldier, may perhaps tend to explain, in some measure, why he is a fit subject for the reception of the typhoid germ.

He is, like the British soldier, not a native of this country. He is in novel surroundings. His habits are anything but cleanly, a bath is a luxury in which he seldom indulges, and so far from being encouraged to contract the habit in my experience few opportunities are given him to do so. I have not seen any well appointed bathing places in any lines with which I am acquainted.

He quenches his thirst from any and almost every stream which crosses his path. His dietary is a liberal one and is not curtailed, to any great extent, by caste prejudices. He eats flesh freely, and is particularly partial to highly flavoured curries. He drinks what alcohol he can get, and is a worshipper at the shrine of my lady nicotine. It is thus seen that he does himself well and, in contrast to many of the natives of this country, not only does not eat too little, but he eats too much. He consequently, like the European resident in India, suffers much from alimentary disorders.

He is not provided with any too liberal amount of an space in barracks, although he is in all respects similarly situated to his brother British soldier and deserving of as much consideration.

His barracks are, as a rule, dark and ill-ventilated and, from a hygienic point of view, overcrowded. He eats his meals, sleeps, brushes his kit in the same room, which in the hot season is the abode of countless myriads of flies. He practises that unnecessary habit of cleansing his cooking pots and eating vessels by means of a handful of soil or sand picked up at hazard.

He sleeps with his mouth covered and inhales as much C.O. as would poison the average European, thus lowering the vital resistance of his pulmonary apparatus and preparing the way for the growth of any microbe capable of infecting the lungs.

From these remarks it will be seen that the two main channels by which disease-bearing germs enter the human body are, under the existing conditions of life and habits of the Goorkha, more or less prepared and made ready for the reception of these germs.

The Disease as it affects the Goorkha

In this paper I have to deal only with such sporadic cases as have occurred from time to time in the Regiments to which I have had the honour to be attached. With regard to epidemic outbreaks I have no experience, as the disease has never occurred in epidemic form during my term of service with these Regiments.

Enteric fever is not a rare disease in these men from Nepal so far as my experience with two Goorkha Regiments goes, and I understand that the Regiment which occupied this Fort of Doshi before my own, had not a few cases of the disease during their year of occupation.

Concerning the ordinary typical case of enteric fever, which is easily recognizable clinically and by means of the serum tests at our disposal, there are a few points in which it appears to differ in some degree from that affecting Europeans.

- 1 The onset appears to be more sudden, one has rarely seen the "gradual step-like ascent" in the first week.

- 2 Initial bronchial catarrh has been the rule.

- 3 Spots are difficult to detect partly due to the colour of the skin and partly to the existence of many forms of eruption, sudamina, acne, etc.

- 4 The temperature curve shows marked remissions.

- 5 Profuse sweating is not uncommon.

- 6 Abdominal tenderness and gurgling have rarely been marked symptoms. There is always a certain amount of tenderness, but as often as not, the patient gives a negative answer to one's enquiry as to the existence of "Dukcha."

- 7 Splenic enlargement cannot be taken as a sign of any value, as most of the men have at one time or another suffered from malaria. One

occasionally makes out some increase of tenderness in the splenic region

8 Constipation appears to me to be commoner than diarrhoea

There are, however, besides those cases which I have described as typical, some cases in which the initial symptom is pneumonia. The temperature after a severe chill rises suddenly, and well-marked pulmonary symptoms develop

In such cases, the physical signs and temperature led to the diagnosis of pneumonia. In neither, however, did the temperature fall to normal at the usual time, and it was not till the beginning of the second week that any abdominal tenderness could be detected and the "patients began to look like typhoid." The appearance of spots and the serum reaction establish the diagnosis in one case, while in the other the clinical picture was complete in the second week. Osler refers to such cases as these and speaks of the impossibility, in the absence of spots, of saying whether "the disease has been pneumonia in which the so called typhoid symptoms have developed or whether it was typhoid with early implication of the lungs"

There are other cases in which marked bronchial symptoms suggest that "acute bronchitis" is the only trouble. In my experience, to a greater or less degree, initial pulmonary symptoms have been present in almost every case of the disease

Again other cases are met with in which Widal's reaction gives positive results and in which there is obviously a malarial element. The patient's medical history sheet has, in any cases of this nature I have seen, shown that the sufferer has had frequent attacks of malaria, and the fact that quinine did not cure the disease when given either by the mouth or hypodermically led to Widal's test being applied. I have no doubt that not a few remittent fever cases are of this nature. I have not been able so far to detect the malarial parasite in blood films from such a case, although it would seem that the condition of the blood in typhoid fever is just such a chance as this parasite would wish for

In this connection it will not be out of place to speak of a class of case which resembles in many respects typhoid fever, but which gives no Widal's reaction. Every medical officer is familiar with the "Remittent Fever" case which is dosed with quinine with little or no effect, and which, after having had fever every day for two or three weeks or sometimes longer, recovers. These cases are, of necessity almost, diagnosed 24 b, when Widal's reaction is negative, and the necessity arises for finding a number in the "Nomenclature of Diseases" under which to class the condition, and especially so is this diagnosis

forced upon us in that no other methods of investigation are at our disposal in regimental hospitals. It is not difficult to recall cases which have occurred in cantonments in India, in which the ordinary Goorkha diet (and that such an one as I have described) has been eaten all through the course of a fever of this nature (when one has to limit one's monthly contingent bills to not more than Rs. 25 per mensem, as under existing regulations, there is little scope for scientific dietary). From this, it will be seen that, were there any extensive involvement of the intestinal tract in cases like these, such a diet as that known as "ordinary" would produce disastrous results. Again these cases are in my experience scarcely of sufficient severity to merit the assumption that this may be the cause of the failure of Widal's reaction. At the same time they suggest enteric fever to one's mind and in some ways resemble it. In one case there was frontal headache, furred tongue, vague abdominal tenderness and tenderness over the spleen, but no spots and no Widal's reaction. The patient had loose motions, which were not pea-soup like. The treatment was "expectant" with quinine and milk diet. If cases such as these are not enteric one is equally certain that they are not malarial. It is just possible that, when these cases are more fully investigated, they may be placed on the other side of that boundary line which separates true typhoid from what Dr Grunbaum has provisionally called "typho-coloid fever"

The Propagation of the Disease

It has been proved conclusively, I think, by Firth and Horrox that water is not the only vehicle by means of which this disease is spread. In the case of the 1st Goorkhas the water comes from mountain springs through iron pipes and is distributed to the men in the lines by means of stand pipes. Except from fouled vessels or pollution of the water after it has been drawn, there can be no infection from this source. Although a number of cases have from time to time occurred in their cantonment, there has been no epidemic

In Doshi, the water-supply is from a mountain stream with no source of pollution near it, till it reaches the Fort, in which it runs for about 20 yards uncovered. I understand that the 2-2nd Goorkhas had not a few cases of the disease but no epidemic

Enteric fever is a septicæmic condition, and it is known that the intestinal tract is not the only way by which the bacillus enters the blood stream. It is true that this would seem to be the principal route, but in that class of case, of which I have made mention, and in which the initial symptom is pneumonia, I am of opinion that the primary seat of infection is in the lungs, and that the bacillus enters the lungs in

dust This appears to me to be so, in that the intestinal or rather the abdominal signs did not develop till later than usual in the two cases, of which the charts are shown—till in fact the bacillus has had time to "grow through" the internal organs and reach the intestine

In proof of the septicæmic nature of the disease it is stated that "the implication of the intestine is not more frequent than the implication of the bronchial mucous membrane, and that both these symptoms may be produced by the injection of typhoid toxins" It would, therefore, seem reasonable to suppose that one or other of these tracts must first show signs of involvement, according to which is primarily the recipient of the infecting microbe, and after which the septicæmic condition is established In those sporadic cases, in which the intestinal symptoms are evident from the beginning, it is to my mind clear that the vehicle is not water, where, as is the case here, 1,000 men drink from the same water-supply

It is worthy of note that in a *post-mortem* on the body of a red setter dog, the Hospital Assistant who did the *post-mortem* informed me that the bowel was the seat of well-marked ulceration This may have been dysentery (from which dogs are said to suffer), on the other hand, it may have been typhoid

Lastly, that most injurious habit which all sepoys have of cleansing their vessels with soil picked up from around their own door and on which some one recently recovered or suffering from enteric fever may have micturated cannot be too strongly condemned It is a very possible source of the propagation of the disease

Differential Diagnosis

With regard to pneumonia and bronchitis enough has been said in the course of these remarks to show that the necessity for their diagnosis from enteric fever does arise

From phthisis, the diagnosis is often one of considerable difficulty One is accustomed to be on the look out for pulmonary tuberculosis in Gookhas, and when as is sometimes the case or initial bronchitis is accompanied by a remittent temperature and sweating in the evening, with the steady decline of the patient, one is considerably puzzled till some more definite symptom arises and removes the difficulty

Another case is, I think, worthy of note, in that when not provided with the necessary equipment to perform Widal's reaction, I mistook a case of early tubercular peritonitis for enteric fever, and it was not till the nodular condition of the abdomen became apparent that the error in diagnosis was recognised

In speaking of the differential diagnosis of the disease in the early stage I have only alluded to those conditions which have come under my own observation In these few remarks the facts narrated are advanced without any spirit of

dogmatism and with a view to elicit the experiences of other military medical officers on the same subject

AN I M S DINNER IN BURMA

A VERY successful I M S dinner was held at the Pegu Club, Rangoon, on February the 13th It was organised by Lieutenant Colonel Frenchman The following officers of the service, some of whom had come long distances expressly, were present Surgeon General Hay, Colonel Little, Lieutenant Colonel Dantra, Lieutenant Colonel Frenchman, Lieutenant Colonel Rundle, Lieutenant Colonel Davis, Major Castor, Captains Duer, Lentrican, Williams, Stodart, Rost and Hammond, and Lieutenant Willocks

Colonel Little proposed the Indian Medical Service coupled with the name of Surgeon General Hay Colonel Little was glad to be able to inform them that there seemed every probability of Burma allowance being granted to medical officers in civil employment Several other speeches and toasts followed Captain Duer said that they had listened to a good many speeches, mostly complimentary and humorous, but it appeared to him that one of the main objects of such a dinner had been lost sight of That object was to discuss improvements in the Service One improvement he would like to see would be that the Director General should have a seat on the Viceroy's Council When it was remembered how Plague and Famine had raged in India of late years it seemed a most strange anomaly that the Sanitary Adviser of the Government should not have a seat on the Legislative Council He would also like to see their Inspector General a member of the Lieutenant-Governor's Council

He was very glad to hear that there seemed a possibility of officers in civil employment getting Burma allowance He thought that officers stationed in Rangoon should receive Presidency house allowance as house rent in Rangoon was so excessive

He also suggested that officers serving over 25 years should be granted a proportionate increase of pension for each year after 20 years' service Many officers by reason of age were precluded, some by only a few months, from serving 30 years, and under present rules they could never earn a pension of more than £500 a year, while the extra few months, if they were able to serve them, would mean a pension of £700 a year No doubt a considerable number of the officers who entered the Service late were more efficient than those who had entered before 25 years of age having devoted a longer time to their education, having held hospital and other appointments, and in some instances having continued their studies to take higher qualifications No doubt there were many other alterations and improvements required in the Service, and he hoped these would be discussed at future dinners

THE MEDICAL STAFF COLLEGE

The Secretary of State for War has approved of the appointments of the following physicians and surgeons as clinical teachers to the Medical Staff College

Medicine—Dr Sharkoy, St. Thomas's Hospital, Dr Hale White, Guy's

Surgery—Mr Pearce Gould, Middlesex, Mr Stanley Boyd, Charing Cross

Dental Surgery—Mr Badcock, Guy's

Dermatology—Dr Colcott Fox, Westminster

Laryngology—Mr Steward, Guy's

Midwifery and Gynecology—Dr Dakin, St. George's

Ophthalmology—Mr Treacher Collins, Royal London Ophthalmic

Otology—Mr G Cheate, King's College

Pediatrics—Dr Garrod, Hospital for Sick Children, Great Ormond Street

Psychological Medicine—Dr Craig, Bethlehem Royal Hospital
MAJOR W B LEISHMAN, M.B., Royal Army Medical Corps, to be Professor of Pathology, *vac* A. E. Wright, M.D., who has resigned the appointment, February 1st.



ENTERIC FEVER IN GOORKHAS

By R. McCARRISON, M.B., B.CH., L.M.D., I.M.S., M.O., 2/4 Goorkha Rifles

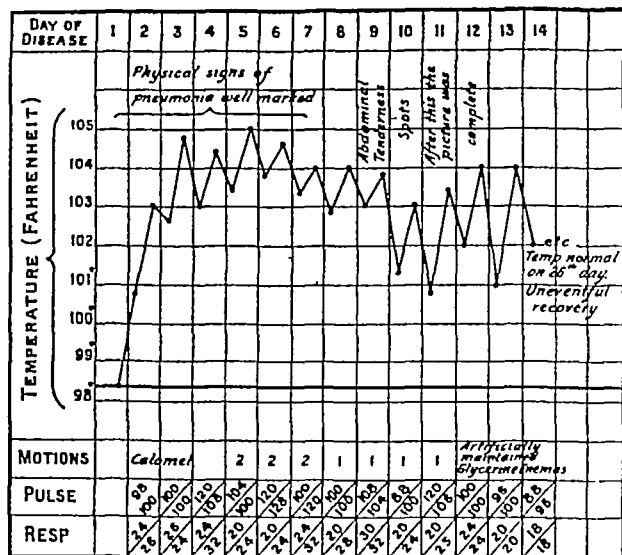


FIG 1

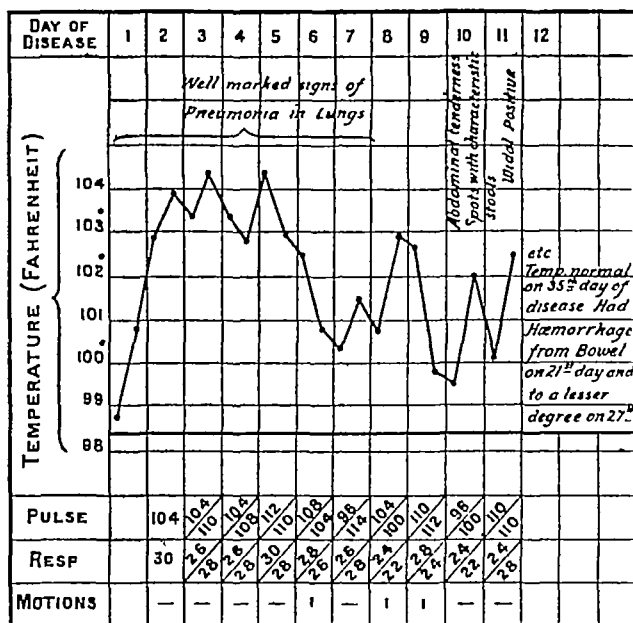


FIG 2

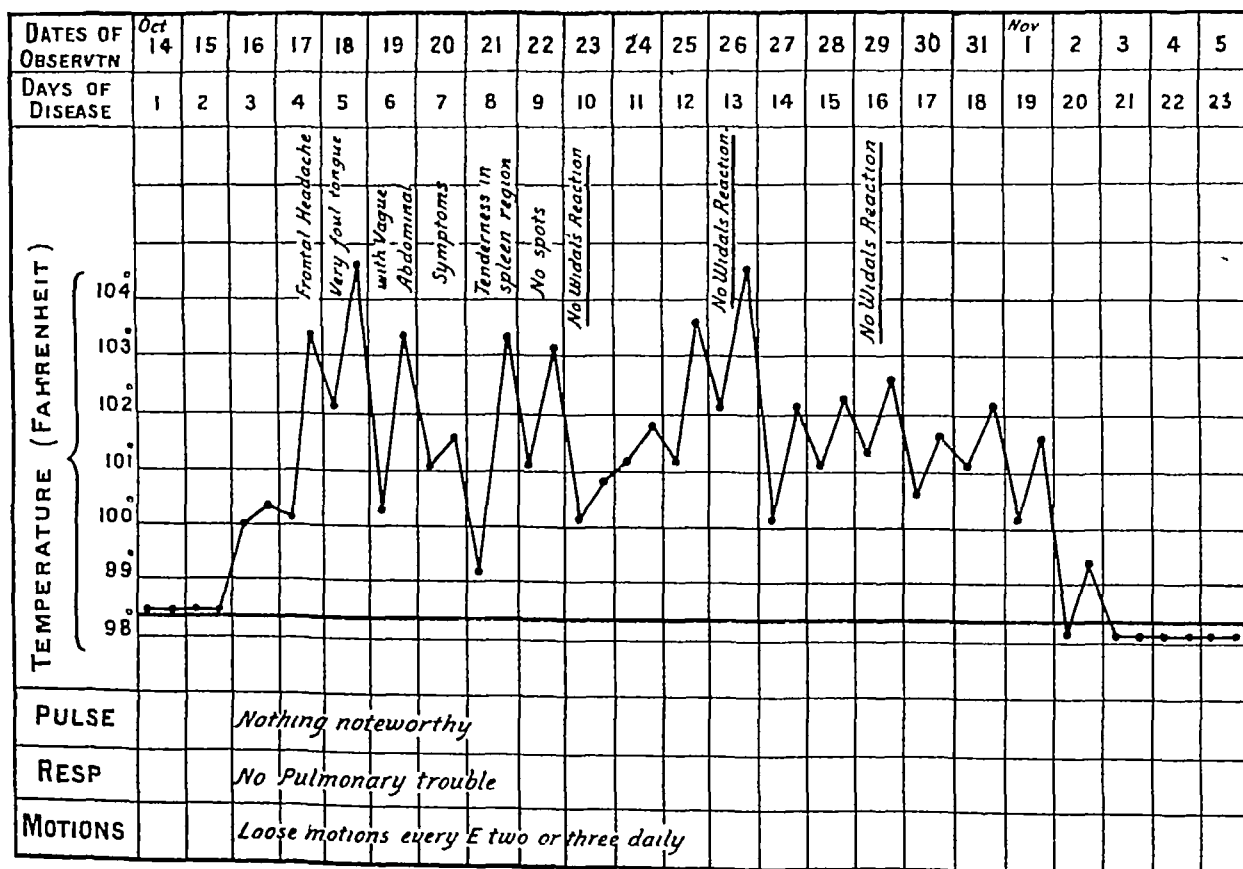


FIG 3

THE
Indian Medical Gazette

MARCH, 1903

THE COSMOPOLITAN DISEASES IN THE
TROPICS

ONE of the most interesting and original chapters in Scheube's "*Diseases of Warm Countries*" is the last one devoted to brief remarks upon what our author has happily called "Cosmopolitan diseases" in the tropics.

This question and the allied one of the geographical distribution of disease is one that has not yet had the attention it deserves. Indeed since Husch's classical work, which is now in many respects hopelessly out of date, no work has appeared, except a small one by Dr A Davidson, which properly treats of this subject. Yet it is one which we consider of much importance. It is not uncommon to find theories as to the etiology of disease which may be true enough for one country yet by no means apply to the disease in other countries—for example, cirrhosis of the liver may be well called "gin-drunkard's" liver in Europe, but gin or ardent spirits has little share in its etiology in India. Therefore we consider that much more attention needs to be paid to the geographical etiology of disease. If it is true, for example, that liver abscess is rare, or comparatively rare, in the West Indies, surely this should make us think if dysentery is the one and only antecedent cause of this formidable complaint.

Let us now return to Scheube's chapter.

As to *Typhoid fever* we only too regretfully have to admit that it is well known in the tropics. Asto exanthematous typhoid as Scheube calls what is usually termed "*typhus*," it has not, he says, "spread extensively in tropical and subtropical countries." This is true, but the occurrence of true typhus was ten years ago firmly established by Major Pisani, I.M.S., F.R.C.S., and others as the cause of widespread epidemics in Baluchistan, and indeed it is well-known among the trans-frontier tribes. Typhus was supposed to have prevailed extensively in the Madhi's army before the reconquest of the Soudan (see Slatin Pasha's book), but on the capture of Khartoum it was found that much, if not all, of what was called typhus was really cerebro-

spinal fever. We do not follow Scheube in his statement that "*Relapsing fever*" and bilious typhoid" are only modifications of the same disease. What Murchison described as relapsing fever (due to the spirillum), is certainly well known in the Bombay Presidency, but much of what was vaguely called "bilious typhoid" was either true typhoid or severe malarial remittent fever.

Cholera we may well admit as a cosmopolitan disease, but this is rather in its epidemic manifestations. It is nowhere endemic out of the tropical and subtropical regions.

Measles is a disease of all climates and races with a few exceptions. In India it is usually a mild disease, which probably point to a considerable racial experience of it, for when it attacks new territories, as in the Fiji Islands in 1874, it is attended with terrible mortality.

Scarlet fever, on the other hand, is scarce, or quite unknown in the tropics. This question was fully discussed in our columns in 1899. In India though often imported it seldom or never spreads, and can scarcely be called a disease of natives of the tropics, either in Asia, Africa or America. This points probably to some factor, such as warmth, not yet understood in its etiology.

Small-pox is the most cosmopolitan of all diseases, and no single method of western medicine has been of the same incalculable advantage to tropical races as the introduction of vaccination. We do not understand what Dr Scheube means by saying that it is "very difficult to obtain active vaccine" in the tropics. Nor can we agree with him that buffalo lymph has proved of more value than calf lymph in India. As all our readers know, the very best lymph can be produced in India from calves, and it can be and is admirably preserved in glycerine, vaseline or lanolin. Moreover, we have vaccinated from the calf with complete success all through the hot weather, so that it is possible, though not usual, to keep up vaccination all the year round.

Chicken pox, says Dr Scheube, is rarely mentioned in medical reports. Quite true, but it is on account of its commonness rather than its rarity that it is so seldom written about.

We cannot agree that *erysipelas* is rare in the tropics, all of our readers have seen cases, and the exanthem is plainly to be seen as a dull red on the darkest skins of even aboriginal tribes.

Tetanus is certainly, as Scheube says, very extensively distributed in the tropics. It is dangerously common in every big city in India.

Pneumonia, says Scheube, is very unevenly distributed in the tropics, and in his own experience in Japan croupous pneumonia was a rare disease. This certainly cannot be said of India. For decades past severe types of pneumonia have been known on the N-W Frontier, and in every hospital cases of true lobar croupous pneumonia are frequently met with. True it is that since the great influenza pandemic of twelve years ago pneumonia, both lobar and lobular, have become much more common. At the present day in many prisons in India pneumonia has come to be more dreaded than even dysentery used to be. Indeed, the recrudescence of pneumonia all over the world is a certain fact in the medical history of the past ten years.

Whooping Cough is frequent in some countries and rare or unknown in other parts of the tropics. In India it is perhaps not so common as in England, but marked epidemics are far from being unknown.

Influenza spares no land and no race in its pandemic spread and persistence.

Mumps, says Scheube, appears with unequal frequency in the tropics. It is very common in Bengal Jails and in Gooikha Regiments, in fact it is quite as well known in India as in Europe.

The occurrence of "*acute articular rheumatism*" or acute rheumatic fever in India is a debated subject. Many medical men can remember one or two cases, but we maintain that it is much less frequent in natives and much less commonly seen in native hospitals than in English hospitals at home. By rheumatic fever we mean the acute specific fever with cardiac complications and amenable to the salicylates, not rheumatism with fever or chronic rheumatism. A vague form of rheumatism, called in Bengal *bhat*, is certainly very common all over India, but its exact causation is as little known as the causation of the rheumatic troubles of the aged in Europe.

As regards *Tuberculosis of the Lungs*, we are glad to see that Dr Scheube recognises its extreme commonness among natives in India. The reports as to its frequency in Africa are contradictory as they used to be in India. Modern views as to the importance of pure air and avoidance of rebreathed air are quite in

accordance with the great prevalence of the disease all over India. Tuberculous joint disease is certainly less commonly seen in Indian hospitals than in English ones. It is not unknown, however, and it has been said to be not uncommon among native ladies immured within their zenana's walls.

Lupus, or skin tuberculosis, is said by Scheube to be rare in the Further East. It is also comparatively rare in India, but we saw a well marked case a few days ago.

Syphilis is well known all over the tropics, but we do not agree as regards India that civilisation often means "syphilisation." The disease is well known and very common among hill and aboriginal tribes who have never come into contact with Western civilisation. We doubt if there is any difference in the severity of the disease as seen in natives or Europeans. Other *venereal diseases* are extremely common in India among all tribes and peoples, quite as much so as among any European race.

As regards "*Diseases communicable from animals to man*," we doubt if there is any difference between Indian and European experience. Hydrophobia is very common in India, glanders and anthrax are also very well known diseases of animals in India and have now and then been communicated to man, though Dr Scheube has no information on the subject.

We are glad to see that Dr Scheube is not a follower of Dr Sambon's heresy with regard to *heatstroke*.

As regards constitutional diseases, *rickets* is certainly rare in India, though cases have been reported. This, as Scheube says, may be due to the fact that natives of India while infants derive their sustenance (as Mr Micawber says) from Nature's fount, though, on the other hand, their early use of rice and the pernicious custom of breast feeding up to 18 months should have a contrary and bad effect on the children's nurture.

Scurvy, we know, is common enough in India, though we are not among those who put down every case of swollen and bleeding and neglected gums to scurvy. Scheube says that scurvy is unknown in Japan and Singapore.

As regards *diabetes*, Scheube reports its frequent occurrence in various tropical countries. It is certainly very frequent in India, not especially among Europeans, but markedly so

among the educated classes of Indians. It is not known to exist among the inhabitants of Central Africa. Scheube has only seen a few cases in Japan.

Gout is certainly rare in India, it is fairly often seen in Europeans in India, but it is doubtful if a real case of genuine gout has been reported among the natives of India. In Japan Scheube never saw a case, and it is equally unknown among the inhabitants of Brazil.

Goitre and *cretinism* is endemic in many tropical countries, mountainous as well as flat. No race or nationality enjoys immunity from this affection, though it is said that the *dhungars* of Chota Nagpur are immune even when they migrate to places notoriously goitrous.*

We have on a former occasion discussed the supposed rarity of *cancer* in the tropics. Scheube operated on many cases in China and Japan, but at any rate it cannot be said that cancer is as common in India as it is in England.

Cardiac diseases, especially functional ailments, are common among British soldiers in India, but less common among natives. Chronic mitral valve disease, with failure of compensation, is a less frequent sight than in European hospitals, though ascites due to other causes is extremely common.

Aneurism is common in Japan, and common enough in India, though probably less so than in England.

Diseases of the bowels of all kinds are very common in India, and in fact many chronic diseases end in either a terminal dysentery or diarrhoea. They are also common in other parts of the tropics. Scheube says that Negroes are rarely affected with *piles*, in this respect they differ greatly from natives of India who suffer largely from piles as the notices of "pile curers" in every bazaar testify.

Intestinal parasites are of extremely frequent occurrence in many parts of India. In Bihar about 90 per cent of the inhabitants suffer from one or more kind of intestinal parasite. *Hydatid* is common in the Punjab and seen in most parts of India, but is not known in many other tropical countries.

As regards *nervous diseases*, they are not very common in up-country hospitals, but every form

of nervous disease, known to Gowers, will be met with among the *clerentele* of big hospitals like the Calcutta or Madras Medical College Hospitals. Scheube points out the effect of tropical climate on sleeplessness and nervous irritability leading to *neurasthenia* as Captain Gordon Tucker, I.M.S., has lately written about (February 1903).

As regards *Mental diseases*, it is safe to say that they are much less common among the natives of India than in Europe. It is probably correct to say that Europeans with a predisposition to nervous disease should not go to the tropics. Insanity in most of its forms is found in India, but relative to population the proportion is not great. Among the 74,000,000 inhabitants of Bengal there are only to-day one thousand lunatics considered to need confinement in an asylum. Epilepsy is not rare, especially the *petit mal*, and is often feigned. General paralysis of the insane is certainly extremely rare among natives of India, acute mania is often attributed to the use of *Cannabis Indica*, which is often recoverable. Mental disorders are said to be not common among the Chinese, but all forms of dementia and mania are found among the Japanese. The following remark is one which we entirely endorse—*General paralysis and tabes are rare among half or quite uncivilised races notwithstanding the frequency of syphilis*, "a circumstance from which we may conclude that syphilis is not the only cause of these two diseases, but that other etiological factors, to be sought in our modern civilised life, combine with it in originating these disorders."

Skin diseases, and especially parasitic diseases of the skin, are very common in the tropics, *eg*, scabies, pityriasis versicolor and many varieties of ringworm and rhobie's itch.

Pemphigus is not uncommon in India and our author notes its frequency in China and the Straits Settlements.

We do not think that *Psoriasis* is common or even known in India, though it is now and then confounded with other diseases of the skin. Scheube failed to observe the disease in Japan. *Boils* are, we all know, extremely common in India as they are in other warm climates. *Keloid* is common in warm countries, in scars of vaccination marks especially. Albinos are not rarely seen in Indian bazars.

Diseases of the eye are very common, we note that Scheube correctly attributes nyctalopia to the great glare. He makes no remarks upon

* So Scheube. Does any one know the authority for this statement?—Ed

the great commonness of cataract This affection seems to depend on glare, for it is much more common as we proceed from damp green Bengal to dry sun-parched Upper India and Punjab

This whole chapter is a suggestive one and contains in itself the text for a whole volume

LONDON LETTER

LEGISLATION AGAINST DRUNKENNESS

ON the 1st of January an important statute passed by the last session of Parliament, entitled "the Licensing Act, 1902," came into operation Under the provisions of this measure very stringent restrictions are placed upon licensed premises and clubs with reference to the sale of intoxicating liquors to drunkards Drunkenness has, under certain circumstances, been made a crime, and the encouragement of drunkenness made punishable in various ways The "habitual drunkard" has become a marked man or woman subject to police observation and social disabilities of sorts A husband or wife can obtain, for example, by order of a Magistrate, a separation from a wife or husband who is a habitual drunkard, and it is an offence for a person so classed to purchase or attempt to purchase liquor at a public house or club The Act goes so far as to impose a penalty on any person who procures drink for any drunken person

There can be no doubt that the new law will make for sobriety and will also make for morality, for it is well-known that the bulk of the crime of this country is caused by drink

That it was much needed a very superficial observation of the condition of certain quarters of towns on Saturday night is of itself sufficient to prove And even in the country the great number of public houses and the great number of people frequenting them are very noticeable

The police have taken up the matter rigorously, and they will no doubt be supported and encouraged by Magistrates and Justices of the Peace Apart from questions of public decency and morality, the medical profession will welcome any reform in respect of drunkenness warmly, knowing well how largely the excessive consumption of alcohol is responsible directly and indirectly for disease, poverty, physical degradation and death

THE USE OF PARAFFIN IN SURGERY

The injection of paraffin into the tissues has become an established procedure in surgery

The use of the material for raising sunken noses and correcting facial deformities of sort has imparted to the process a sensational character, but it was originally introduced by Gersuny of Vienna for quite different purposes, and is still resorted to for the cure or relief of prolapse, fistula, hernia, &c A most interesting history of the subject with illustrations of the uses and benefits of paraffin injections is given by Mr Stephen Paget, FRCS, in a lecture published in the *British Medical Journal* for 3rd January How far the process is practicable in the tropics remains to be seen High febrile, atmospheric and solar temperatures are hostile to it, and if used at all, a paraffin of high melting point must obviously be employed

ANOTHER PRIZE DAY AT NETLEY

Netley still survives Twenty-nine lieutenants-on-probation as they are now called, belonging to the Indian Medical Service, underwent a two months' course of instruction in military medicine and surgery, refraction, X rays and lunacy, and prizes were publicly distributed to the successful examinees on the 10th of January by Sir William Roe Hooper, KCSI, who delivered a most excellent address on the occasion He announced that until suitable arrangements are made elsewhere for the more practical parts of the course of instruction included in the programme of the Medical Staff College, junior officers of the Indian Medical Service will continue to come to Netley, which has been taken for purposes of teaching and training under the direct control of the Advisory Board The Indian Medical Service retains its popularity Forty-one highly qualified candidates have entered the competition for thirteen advertised appointments

MR JOHNATHAN HUTCHINSON'S VISIT TO INDIA

Mr Johnathan Hutchinson has gone to India for the purpose of making enquiries regarding his pet subject of leprosy and obtaining evidence in support of his pet theory of the fish-causation of that disease Indian medical officers must, therefore, be prepared to supply him with information, and I hope that on the principle of *audi alteram partem* data will be furnished against as well as for the hypothesis which he holds as a fixed belief

K. McL

15th January, 1903

Current Topics.

CHICKEN POX NOT A DISEASE OF CHILDREN ONLY

It is one of the disadvantages of the want of a knowledge of the diseases of warm climates that it makes authors sometimes make extraordinary mistakes about the rarity or commonness of certain cosmopolitan diseases. The mistake which we here wish to expose is one which is repeated in nearly every Practice of Medicine, and that is that chicken pox is a children's disease, and this supposed 'fact' is even used to help in the diagnosis of that disease from small pox. For example the writer in the *Practitioner's Guide* says chicken-pox is a "disease of children," and in the monograph on the disease in Nothnagel's *Encyclopedia*, Von Juergensen writes that chicken-pox is, "if not wholly yet practically, a disease of childhood—the first ten years of life."

That this remark, though practically true for European countries, is quite misleading and incorrect as regards India, is within the experience of every one of our readers. At the moment of writing no less than 150 cases of chicken-pox may be seen among adults at the Alipore Central Jail, and a glance at the statistics given in any Report of the Sanitary Commissioner with the Government of India will tell the same tale. Yet in spite of such facts we find Von Juergensen using its "peculiarity to the age of childhood" as one of the means of differentiating it from small-pox. He writes (*op cit*, p 289) "Observations all agree on that point. Most of the cases occur before the tenth year. It is unnecessary to give individual examples, since all writers say the same. Even the unitarian Kassowitz reports that he has not seen a case later than the ninth year. By most authors it is asserted that susceptibility is lost at puberty."

We need not develop the evidence of the common occurrence of chicken-pox in adults in India, as all our readers, we feel sure, agree with us, but it is satisfactory to find that the learned editor of the volume in Nothnagel's *Encyclopedia*, Sir John W Moore, does not agree with the author of the work which he edits, and quotes statistics, even from Germany itself, to refute the fact. Baadar of Basle noted 584 cases, 382 were met in children, seven from ages of 11 to 15, two from 16 to 20 years and two from 20 to 40 years. In the *Lancet* (May 12th, 1883) Dr Lys reported on three cases in adults in Bournemouth. In the *Lancet* (March 10th, 1884) Dr M Margrave reported cases where children were infected from their mother, who was aged 31 years. Heibeden 120 years ago recorded a similar case.

In India it is common enough in children, but it is a hardy annual from February till April in

most prisons in Bengal. The disease varies in type, and in some cases may be very severe, usually it is as mild and harmless as mumps is. Mumps, indeed, is another disease of childhood in Europe, which is quite common among adults in India, as every superintendent of a jail or medical officer of a regiment knows.

We have frequently seen chicken-pox to be of a very severe type in adults, the whole body being covered with pustules, very like those of discrete small-pox, but among them will be found numerous typical true chicken-pox vesicles at all stages of age and development. It may be added that we have often seen cases of chicken-pox in prisons well vaccinated, or inoculated or well marked with the pits of previous small-pox.

It is just as well that it should be known that statements such as we have quoted as to the limitation of chicken-pox to childhood, though to a large extent true for Europe, are quite false and misleading when applied to oriental races and particularly to India.

TYPHOID IN THE FRENCH AND GERMAN ARMIES

THE following note we extract from the *Edinburgh Medical Journal* (January) —

"In the *Journal de Médecine de Paris* for 30th November 1902, attention is drawn to the comparative mortality returns of the French and German Armies. Truly a terrible situation, for, while the Germans lost only 432, the French lost 2,276, men during 1900 from fatal disease, or as 1 to 5, although the hospital admissions from the French army were only rather more than double the number of the German cases. That is to say, that since the struggle of 1871, while Germany has lost about 13,000 men from her flag, or less than a division, France has to acknowledge 99,000, or three army corps. Such are the facts reported to the French Senate, and admitted to be true by the chief of the French army.

Enteric fever and tuberculosis were the two outstanding causes of death amongst the French and German soldiers with the colours during 1900. The following table shows the number of deaths from these causes in the two armies, each of which may be taken to have numbered about 600,000 effectives in that year —

Table of Deaths in 1900

	French Army	German Army
Deaths from enteric fever	600	87
Tuberculosis	1,415	129

The figures given show that almost seven times as many deaths from typhoid, and nearly eleven times as many from tuberculosis, obtained in the French Army compared with the German.

The reason for this disparity is not far to seek. France, with a smaller population to draw upon, strives to maintain as large a standing army as Germany. Thus she cannot pick and choose her men so carefully. Her population scarcely increases, but year by year furnishes greater and greater numbers of conscripts. The standard has to be lowered from time to time, the duties required, in place of growing less, tend to become harder, and the unfortunate soldier, his resisting power enfeebled and more enfeebled, contracts some disease, suffers and dies while on service, or later in civil life."

A GERMAN VIEW OF STONE OPERATIONS

We quote the following from the *Therapeutic Gazette* of 15th December —

KOKORIS (*Wiener Klin. Wochenschrift*, June 12, 1902) reports the statistics on 130 cases of stone in the urinary bladder. Of this number, 127 of the patients were males and only three females. The calculi were chiefly of the uratic variety.

"Litholapaxy was performed on twenty seven patients between twenty and seventy five years of age. This operation could not be completed in one case because the lithotrite broke, and in two others because of the great size of the stone. Following operation four patients died of uræmia.

Suprapubic lithotomy was performed on twelve patients who, in addition to the calculi, also had some other less severe lesion of the urinary tract. One of these patients died of uræmia, another of peritonitis, and two others of sepsis resulting from an extravasation of urine.

Median perineal lithotomy was employed in five cases, and lateral lithotomy in eighty three. The majority of the patients were under twenty years of age. The calculi varied in size from a pea to a goose egg. Post operative complications were rarely observed. The perineal wounds healed on an average of twenty to twenty five days. Two patients died of collapse after operation, and four died of surgical kidneys.

In the three cases occurring in women, the calculi were removed through the dilated urethra.

Judging from the results in the above cases the author believes that perineal lithotomy is the best operation for children. Litholapaxy is the operation of choice in adults except in the cases in which there is an insurmountable obstruction to the introduction of a lithotrite, or in which the stones are too large or too hard to be crushed, or in which it is desirable to drain the bladder. Perineal lithotomy is the operation of second choice. Suprapubic lithotomy should be reserved for the cases in which the stone is very large, very hard, or encysted, and for the cases of nephritis, pyelitis, cystitis, and irritability of the bladder. In all the cases of suprapubic lithotomy in which the vesical wound is closed at the time of the operation the lower angle of the abdominal wound should be kept open in order to prevent an extravasation of urine into the space of Retzius from leakage along the line of sutures in the bladder."

A NEW TREATMENT OF BERI BERI

THE following is a synopsis from Janus (*apud Jour. A. M. A.*) of a new treatment of beri-beri —

"This communication from the insane asylum of Buitenzorg, Java, states that the berry or pea of the *Phaseolus radialis*, a common plant, has proved effectual in the treatment of beri-beri. It was thoroughly tested on the 250 to 300 inmates of the asylum, and displayed a marked prophylactic action when an average of 150 gm. of the peas were eaten regularly every day. No injurious effects of any kind were noted even after prolonged use. It also proved a good remedy against the infection itself, but had no influence on the sequelæ. The oedema rapidly subsided under its influence and likewise the paresis in the acute cases, which is liable to persist for months. Its influence was particularly beneficial in the severer forms of the disease. The asylum has long been infested with beri-beri, but not a single case has occurred in the pavilion in which the inmates take regularly 150 gm. of the peas in their daily ration. The natives make great use of these peas both in their own food and for poultry. Burg states that the plant was recommended as a remedy for beri-beri in the seventeenth century."

THE PERSISTENCE OF INFLUENZA

In an excellent article on influenza in the *Boston Medical and Surgical Journal* (18th

December) Dr. F. T. Loid draws the following conclusions, which, we believe, will well agree with experience in India of this persistent disease —

1 "Infection with influenza bacilli is prevalent apart from an epidemic of influenza. Influenza bacilli have been found in the sputa of sixty of one hundred unselected cases with cough. In about one half of these sixty cases the influenza bacilli were in practically pure culture.

2 There is nothing distinctive in the clinical manifestations of influenza apart from epidemics, and the diagnosis can with certainty be made only by the examination of the sputum for influenza bacilli.

3 The duration of the cough and expectoration after an attack of acute influenza does not usually exceed six weeks, but in some cases the duration is for months or years.

4 Many of the cases formerly classed as chronic bronchitis are chronic influenza.

5 Cases of chronic influenza with paroxysmal dyspnoea may closely resemble asthma.

6 Chronic influenza is not infrequently mistaken for pulmonary tuberculosis."

THE POST GRADUATE COLLEGE IN LONDON

MEN going on furlough may be interested in the new scale of fees at the Polyclinic or Post Graduate Medical College which are as follows —

The following scale of fees will come into operation on January 1, 1903. — All medical practitioners holding qualifications granted in any of H. M. dominions, where ever resident, are eligible as annual subscribers. To others tickets of admission are granted for stated periods.

The annual payment of a subscriber is due on January 1 of every year, and is ONE GUINEA. This entitles to (1) use of Library, Museum, and Reading Rooms, (2) attendance on Cliniques daily, at 4 P.M., (3) receipt of Journal monthly, post-free, (4) to bring or send patients for consultation, (5) to have specimens examined for small fees, (6) to attend the Museum Lectures, (7) to receive a ticket for the Daily Systematic Lectures on payment of an additional guinea.

The fees for Special Classes (teaching) are extras, both to subscribers, and to those not eligible as such.

Fees to Non-Subscribers

For those not eligible as subscribers the fees are as follows — For the composite course of Lectures (daily) for the year or any part of the year (January to December) Two GUINEAS.

Admission to Cliniques, the composite course of Lectures, the Library and Museum, and to receive the Journal monthly, post-free — Three months, £3 3s, six months, £5 5s, twelve months, £6 6s.

Admission to the privileges mentioned above, and also to single courses of any of the three Practical Classes — Three months, £5 5s.

Admission to Cliniques and privileges mentioned above, and to all teaching classes given in the College — Three months, £7 7s, six months, £10 10s, twelve months, £12 12s.

Subscription to the Journal

The Journal will be sent post-free to any address in the postal union, on prepayment of 10s 6d per annum, and anyone so subscribing will (if otherwise eligible) be allowed at any time to complete his position as a subscriber to the college, and obtain admission to the afternoon clinics, &c., on payment of an additional half-guinea.

MR JONATHAN HUTCHINSON's skill as a special pleader is well known, and on reading the

frequently recurring references in support of his own theories as to leprosy and yaws, we feel that we are almost persuaded to believe in them till reason reasserts itself, and we escape from the chain of the pleader, but surely it is going too far to say that the recent discussions on yaws have gone so far as to settle the question of yaws being identical with syphilis. Yet there is what Mr Hutchinson has said, witness the following from *Polyclinic* (p 541, December) —

"There will probably be no further serious dispute that yaws, prang, &c., are identical with syphilis, and depend upon race and climate for their supposed peculiarities. This committee may now be dissolved, and it will probably not be needful to occupy our pages with many more allusions to it."

We, on the other hand, maintain that very few have been convinced of the truth of Mr Hutchinson's thesis, and the most recent book on Diseases of Warm Climates Scheube's, dismisses this view in a few lines of small print

WHAT promises to be a standard work on *Hydatid Disease* has just been published by Dr London, of Adelaide (London, Ballière, Tindall & Cox)

OUR contemporary, *Medical Missions in India*, gives the names of 137 medical missionaries in India

Now that oysters are in bad repute, it is reported that the use of lemon juice on them is inimical to the life of the typhoid bacillus. How simple!

A RECENT report discussed the prevalence of tuberculosis in Ireland, where the death-rate from this disease is 277 per mille. The purely agricultural parts of the county have a very low rate as compared with the cities

AN epidemic among miners in the Dolcoath Mine in Cornwall has been traced to the ankylostoma, we shall give an account of this in our next issue

THREE more books by I M S officers are announced, viz, one on *Indian Anopheles* by S P James and W G Liston (Thacker, Spink & Co), and another on *Cataract* (Ballière, Tindall & Cox) by Herbert of Bombay, and *Infants and their Ailments* by Major D Simpson, I M S (Thacker, Spink & Co)

WE understand that owing to a catch vote it is probable that there will be no Tropical Section at the B M A meeting at Swansea this year—but we are glad to announce that there will probably be a meeting of men interested in Tropical Diseases at Cambridge during the summer

NOTES FROM CONTINENTAL EYE CLINICS

VII —BERLIN

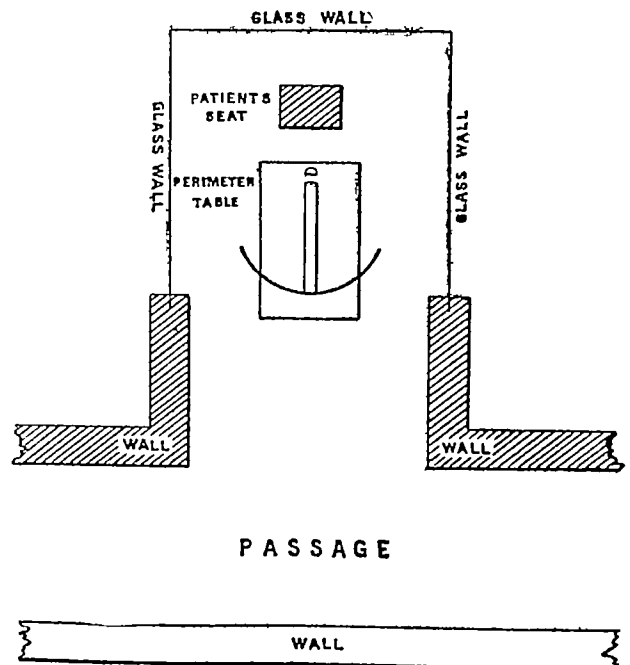
September 10th, 1902 —Visited klinik of Professor Greeff (Universitäts-Augenklinik in der Königl. Charité, Unterbaumstrasse 7)

In the examining and operating room is an elaborate board by means of which any desired form of electricity can be switched on at a moment's notice. This is connected with the Municipal electric system, and a control coloured lamp shows in each case that the correct form of electricity has been commandeered.

Instruments for cauterisation, and apparatus for obtaining condensed light, and for the various forms of medical electricity, are made available by turning handles on this board, whilst in the neighbouring dark-room the various pieces of apparatus for accurate diagnosis (ophthalmometer, keratoscope, etc.) are lit at will by an equally handy system. To visit this splendid klinik is a revelation of what electricity can do for the ophthalmologist.

Space forbids more than a mention of the attached bacteriological and pathological laboratories.

The Perimeter-room, about 7 or 8 feet square, juts out from a passage. The walls are of window glass, while the roof is of thick skylight glass, vide diagram. The arrangement secures a most uniform arrangement of light in the field of observation. It is a cheap and simple plan.



A simple and efficient plan is adopted for the even illumination of the test-types. These are placed in an open box of which they form the back, while the top, bottom and sides are lined with looking-glasses. An oil-lamp placed between every two sets of type is thus enabled to

shed an even light over the whole of each page

Dr Thorner's ophthalmoscope (invented by an assistant of that name) is widely used here. A full description of it will be reserved for a separate communication, but its *principal* advantages may be here stated—

(1) The ease with which one can use it. One who has never used an ophthalmoscope can at once obtain a clear view of the fundus.

(2) The absence of a glare in front of one's eyes whilst making the examination. The rays from the lamp do not meet the observer's eye except through the patient's eye.

(3) The ease with which one can focus by simply moving the focussing handle backwards or forwards. The inclusion of a system of lenses is thus rendered unnecessary.

(4) The facility with which the patient's refraction can be estimated directly by focussing accurately and reading off the result on an index over which the focussing handle travels.

The instrument may be obtained from Franz Schmidt and Hoensch, Stalloeherber Strasse No 4, Berlin, S.

The price of the Thorner's ophthalmoscope with index, etc., for estimating refraction is Mk 355 (a Mk = a shilling).

The *Epidiascope* is an apparatus for the projection of magnified images of objects on a wall or screen for lecture-purposes. It employs reflected light in the case of opaque, and transmitted light for translucent objects.

The drawing shows its shape. It is about 5 feet long, 5 feet high, and 2 feet 6 inches wide.

A page of a text-book, a portion of the body, a small animal or plant, a drawing, diagram or other object can, *without any preparation*, be depicted on the screen magnified and in its own colours.

The opaque object to be used may be up to $11\frac{1}{2}$ inches in width and up to $6\frac{1}{4}$ inches in depth.

An object $8\frac{1}{2}$ inches in diameter can be magnified nine times, for smaller objects a greater magnification can be obtained up to a limit of 25 diameters.

In dealing with translucent objects, such as microscopic slides, a very high magnification indeed can be obtained, the instrument thus serving as a powerful microscope for class demonstrations.

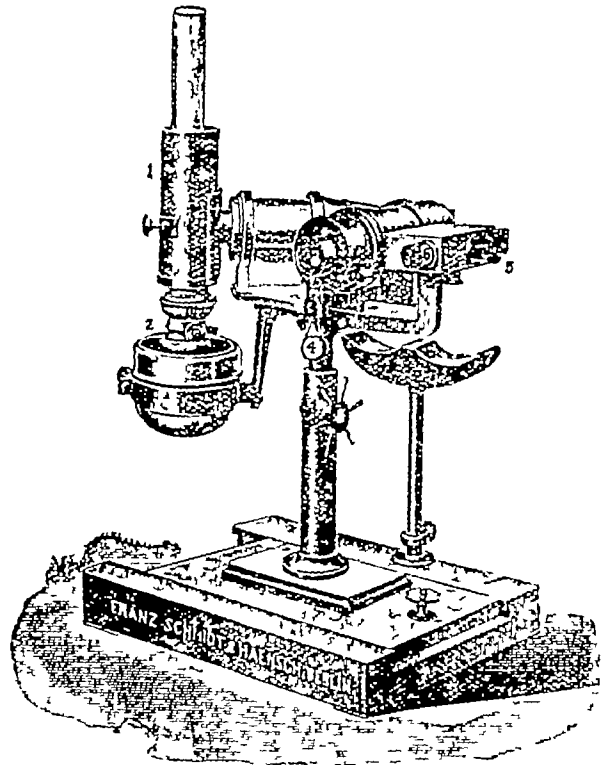
The diagram is self-explanatory. The instrument is in use both in Greeff's and Von Michel's clinics, and is one of the most valuable additions to our means of teaching which has been added in recent years.

Professor Greeff only meets with *Trachoma* in imported cases. These come from E. Germany where the disease occurs in certain scattered but fixed foci, which he terms "*Trachoma islets*."

Copper sulphate stick thoroughly applied is his usual medicinal application, whilst for operative treatment he favours the use of Knapp's roller forceps and excision of the fornix.

For *glaucoma* he uses exclusively a wide peripheral iridectomy and *never* sclerotomy. He prefers a knife to a keratome for iridectomy. He believes that "if anything can be done for *glaucoma*, it can be done by means of iridectomy."

Greeff *tattooes* the cornea by repeatedly dipping a *wide* needle (something like a Bowman's but twice as wide) in thick Indian ink, and systematically inserting it obliquely into the cornea over the desired area, while an assistant cleans the field of excess ink after each stab with a cotton-wool sponge.



For cataract he operates as a rule by the combined method, reserving the simple method for cases in which every indication is favourable.

He confesses his inability to so select his cases as to exclude the occurrence of prolapse which complication he regards as very serious.

He would not perform the simple operation if he would not immobilise his patient thereafter.

For all serious operations he cleanses the conjunctiva with *Lotio Hyd. Perchlor.* $\pi\pi\pi\pi$, instilled the night before operation and again just before operation. He rarely gets an unpleasant re-action therefrom.

The face during operation is covered with a layer of lint soaked in *Perchlouide Solution*, an aperture being cut for the eye.

In the library is the oldest authentic work on ophthalmology, written and published in 1528 by G Bartiche. It is profusely illustrated, and deals at length with the method for the reclamation of cataract amongst other subjects.

The collection of models of various rare cases of eye-disease is a valuable one. The models are artistic masterpieces and are made by an artist on the staff for between £3-10 0 and £10-0 0 each.

Professor Greeff speaks French fairly well and was most kind in his endeavours to show all that was to be seen.

case of panophthalmitis in the two years he has worked in these new buildings.

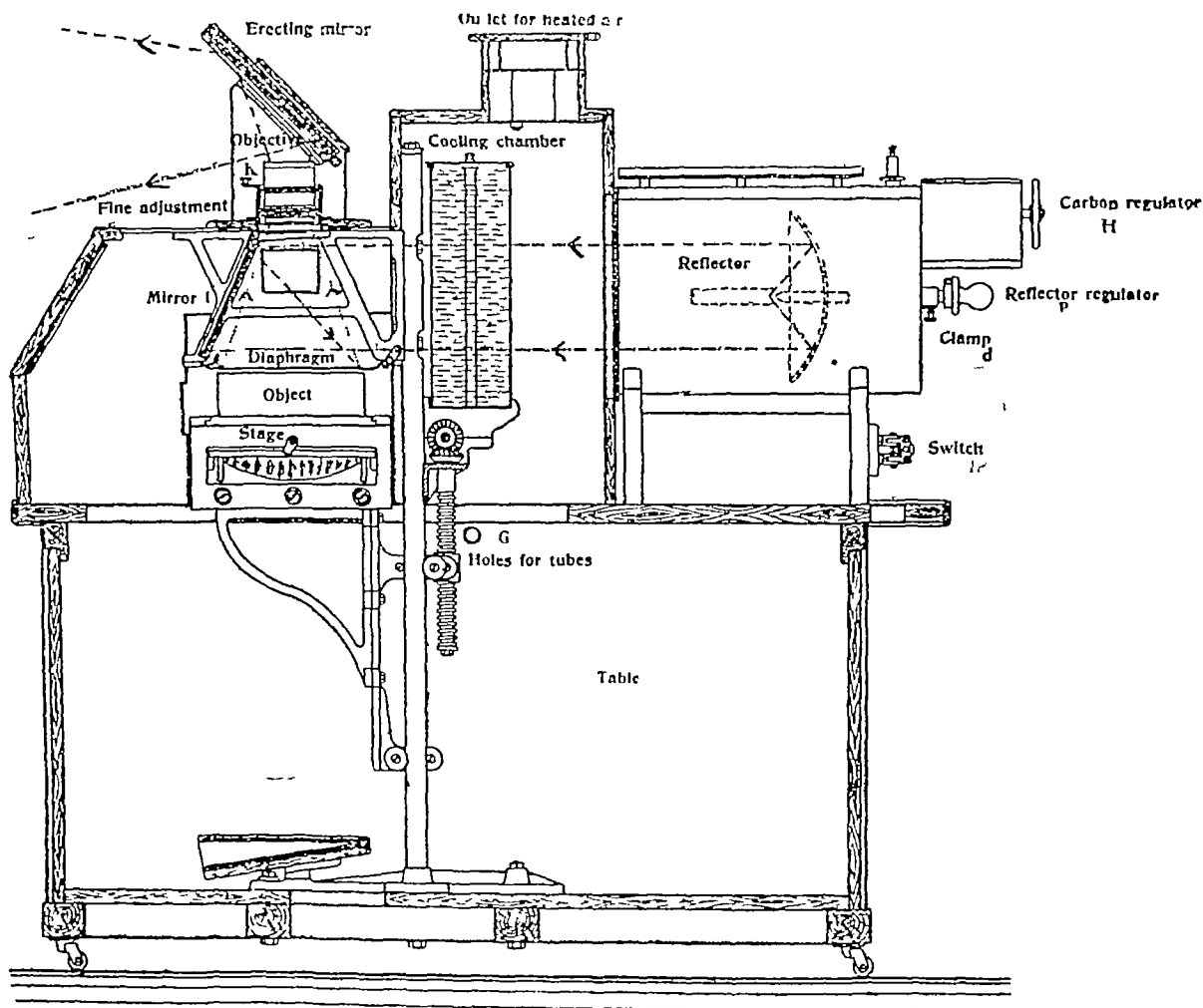
For glaucoma his *one* operation is iridectomy.

For lachrymal obstruction he prefers probes in all cases.

For ophth neonatorum he has a special nurse who cleanses the eye every $\frac{1}{4}$ hour with sublimate solution, and then applies a strong Boric ointment.

Silver nitrate is also employed in varying strengths.

September 11th to 14th — Visited Professor



September 12th and 13th — Visited Professor Von Michel's Klinik (the Royal University Eye-hospital in Ziegel Strasse 5—9). A magnificent modern hospital fitted with elaborate electrical apparatus on the same lines as Professor Greeff's Klinik. Every instrument for diagnosis is of the latest and best. Naval medical officers are attached here on duty to learn ophthalmology.

Von Michel speaks English well and was most kind. He *always* performs the *combined* operation for cataract. His incision is in the limbus, he uses the cystotome, he never uses antiseptics to the conjunctiva, but cleanses it well with sterilised saline solution, and he has not had a

Hirschberg's Klinik, a private institution financed by Dr Hirschberg himself. Hirschberg has visited nearly every eye-klinik in the Northern Hemisphere, and his library, probably the most complete ophthalmological library in existence, is worth visiting Berlin to see. He is a deep thinker and a wide reader, and his knowledge of many subjects outside of his own profession (he has written a German guide book to India amongst his numerous other non-professional works) make him a most interesting talker. He speaks many languages, including English, fluently, and is an admirer of the *I M G*, of which he owns several copies.

His central doctrine is "*individual* antiseptis and asepsis" The instruments, dressings, eye-drops, etc., for each patient are kept separate and apart for that patient alone, and *never* mixed with those of another patient

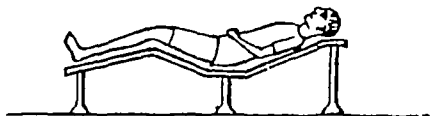
All instruments and eye-drops he boils before each operation Sharp instruments he himself dips and holds in boiling water for about a minute

Dressings, towels, &c., are sterilised under steam pressure Dropper tubes are boiled after being used once

The conjunctiva is sterilised by a thorough rubbing of each everted lid in turn with ~~rub~~ perchloride lotion on cotton-wool sponges

Every detail of sterilisation is attended to most minutely Guests in the operating room are, like the Professor and his students, clothed in long sterilised jackets

Cataract—Hirschberg prefers the simple operation when all the indications are favourable for it The patient reclines on a low couch bent as in the fig



and the operator sits on a chair behind the head The hands are crossed on the abdomen and firmly held by an assistant Hirschberg prefers holocaine, and boils the solution before each operation in small bottles made of a special glass which does *not* react with the drug He states that when holocaine is boiled in ordinary glass vessels points of chemical action are seen on the sides of the vessel and the drug is destroyed, hence the need for special bottles These can be got from Kaiser Frederick Apotheke, Karlstrasse 20A, Berlin

When Hirschberg desires to obtain very marked local anæsthesia, he uses holocaine first, and then instils cocaine just before the operation

For general anæsthesia in a certain class of very timid cataract patients he uses morphine and chloroform, not omitting cocaine locally He has never had a death from an anæsthetic

He uses one needle for secondary cataracts, making a wide tear in the thinner parts of the periphery of the membrane When possible he prefers to remove thick secondary capsules with his forceps through a small incision

He is averse to operating on more than one eye for the removal of the lens in myopia, and thinks this operation is being much overdone

He would reserve it for cases of 20 or more, and would always have one eye untouched He believes that repeated operations lead to detachment of the retina, and thinks the whole proceeding should be carried out in one or at most in two operations

Hirschberg finds no difficulty in working his sideroscope, though the room in which it is

situated is within 80 feet of the tram car cables This room is placed *at the top of the house* Hirschberg formulates three rules for the successful use of the sideroscope, *viz*

- (1) Use a strong magnetic needle,
- (2) Hang it exactly in the magnetic meridian, and
- (3) Keep it clean and free from dust

In India he says you must watch the thread which will change its length in wet and dry weathers Professor Hirschberg approached an aluminium rod, in the point of which was imbedded 1 mgrme of steel to his instrument, and a wide deflection of the magnet took place

In the magnet room are four magnets and a fifth is now being constructed, which Hirschberg proposes to swing above an operation table

The two hand-magnets are very easy to manipulate with one hand, and are fitted with a variety of different shaped head-pieces suggested by Hirschberg's experience

The stronger hand-magnet easily lifts a weight of 15 kilos

With his most powerful magnet the inventor has been able to extract a piece of steel weighing only 0.5 mgrme from behind the retina This is, I believe, an experience others have not been able to attain to

Hirschberg claims to have invented the "great magnet," many years before any one else first wrote about it

R H ELLIOT,
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Captain, I M S

Review.

A Naturalist in Indian Seas, or Four Years with the R. I. M Survey Ship "Investigator" By Major A ALCOCK, MB, LL D, FR E, I M S, Superintendent, Indian Museum London John Murray, 1902

THIS is an altogether delightful book, which Dr Alcock modestly calls "a little story of the deep, compiled from records of the R I M Survey Ship *Investigator*," in which he served as Surgeon-Naturalist for about four years The volume is divided into three parts, the first for the general reader, describes the objects of marine survey of India, the world beneath the waves, and gives an account of many voyagings among the islands in the Bay of Bengal, and the Laccadive Sea The second part deals with the deep sea fauna of the Indian region, with deep sea fishes, crustacea, mollusca, echinoderms, zoophytes and sponges It is intended as a record of some of the work done in the field of natural history by the *Investigator* since she first drew water in 1881 This is specially written

so as to be intelligible to readers who are not professed zoologists. The third part is, as our author confesses, frankly technical and only of interest to students of marine zoology. It however only consists of some eighteen pages out of the total of over 300.

The volume is very freely illustrated with no less than 98 figures, all of which are excellently produced.

The medical reader who has forgotten much of his zoology will read the first and second parts with great interest. The book is written in such a fascinating style that, as Robinson Crusoe is credited with having caused hundred of boys to become sailors, we shall not be surprised if many a man who reads this book will turn his attention to marine zoology. We read the book recently sitting in a verandah at Puri, within sight and hearing of the Bay of Bengal, where so much of the author's work was done, and it gave a new interest to all we saw, as later in the afternoon we strolled along those half deserted sands, which border the holy city of the Hindus. It is quite impossible to give the reader any adequate account of the charm of this book without actually synopsising and thereby spoiling it. It is a book to get and read, and it will charm and divert the attention of many a reader situated, as he may be, many hundred of miles from the "estranging" sea, it will lead him to think of his next leave home and the rambles he will have in lands bordering on seas far away from those Indian ones about which our author has written so pleasantly,—he will never stroll along the sand or sit on the rocks by the seaside without having new ideas and new interests excited by the perusal of this book.

It will not surprise us if this becomes a standard book on popular marine biology, and we have no doubt it will stimulate many a reader to take an interest in the wonders of the deep-sea.

The style of our author is easy and not without charm. It is the work of a scholar as well as a scientist, and the author's evident love of his Shakespeare and Horace is apparent in every chapter.

Mr Murray has brought out the book well, it is well printed, in good type, not too big, and admirably illustrated.

We may conclude with Major Alcock's remark on the Indian Medical Service, which is proud to own him as a member. He writes "It would hardly become me to conclude this short account of my personal connection with the *Investigator* without a word of acknowledgment to that old and honourable service—the Indian Medical Service—which has given me so many opportunities of carrying on the fascinating study of zoology without depriving me of any of the rights and privileges of my own proper profession."

We need only add that if the deities of the sea shipwrecked the author's prospects as a

surgeon they made him a first-rate naturalist and charming writer.

Physician and Friend. Alexander Grant, F.R.C.S. His Autobiography and His Letters from the Marquis of Dalhousie—Edited by GEORGE SMITH, CIE, LL.D. [London: John Murray, 1902.]

THIS book is a record of the life of a veteran of the Indian Medical Service, Alexander Grant (1817-1900), who only passed away in 1900 at the ripe age of 83. His long life at home is example and a warning to those who wish for "extensions of service," for Grant left the service in 1863 and drew his modest pension of £250 for no less than 37 years.

Alexander Grant, as the Editor of this interesting volume points out, has a two-fold claim to a place in Indian history and in the annals of medical science. He was the physician and personal friend of the Marquis of Dalhousie during his long and illustrious proconsulship, and he anticipated or initiated many sanitary reforms in the Army, Navy and Mercantile Marine of the Empire. He has a special claim on many readers of this *Gazette*, in that it was his influence which guided Lord Dalhousie in his efforts to improve the Service, it was Dalhousie who threw the Service open, like the Civil Service, to all classes of the Queen's subjects, so that Dr Goodeve Chuckerbutty was the first of the line of Natives of India who won for themselves a commission in its ranks. It was Alexander Grant who made it possible for Lord Dalhousie to write thus in his Farewell Minute of 28th February 1856—

"Before resigning the Government of India, I submitted for the consideration of the Council proposals for the enlargement and the improvement of the Medical Service. The proposals met with the entire concurrence of the Council. If they should receive the approval of the Honourable Court and should be carried into effect the Medical Service of the East India Company will then be second to none in the world."

The first chapter of this book teems with the names of distinguished members of the Indian Medical Service from Holwell to Norman Chevers, distinguished in Medicine, in Surgery, in Botany, Chemistry, Natural History, Public Health, Medical Topography, Meteorology, Geology, General Literature and Science, Oriental Literature, History and Antiquities.

Grant joined the Bengal Medical Service in 1839, after a couple of voyages in the merchant service. He had hardly landed in Calcutta when he was posted to the 55th Foot (now 2nd Border Regiment) for service in China, where he stayed for three years, during which time he contributed to the *Englishman*, a "Diary of Events," which proved the best contemporary narrative of a unpopular war. He also contributed a valuable series of medical sketches of

the Expedition to the *India Journal of Medical and Physical Science*. He remained in China till the end of 1844, and soon after his return he was offered the choice of the Civil Surgeoncy of Simla or of Bhagalpur, and Dr Simon Nicolson advised him to accept Bhagalpur, a fact which throws light upon the then value of mofussil stations from a pecuniary point of view. Grant, however, did not stay long at Bhagalpur, he was soon after ordered off to the Army of the Sutlej in the first Sikh War, on return he got a year's *batta*, and returned to Bhagalpur. Finding his health unequal to the strain of work "on duties of so large and scattered a station," he applied for and was appointed to Chapra—"one of the three best stations in Bengal" as Grant then described it. In addition to his medical duties, he was appointed Register of Deeds, which raised his income to "nearly Rs 1,000 a month" (probably equal to Rs 2,000 a month now). In the following month he was surprised to get an autograph letter from Lord Dalhousie appointing him to the medical charge of Lady Dalhousie, during the Governor-General's absence on the North-West Frontier. Thus began a connection with the Dalhousie family which lasted all their lives. In October 1853, Grant and Norman Chevers brought out the first number of *Indian Annals of Medical Science*, a Journal which succeeded the *India Journal of Medicine*, and was itself succeeded in 1866 by the *Indian Medical Gazette*. Grant remained as Surgeon to the Governor-General till Lord Dalhousie went home in March 1856, and on his return in January of 1857, he was appointed to the office of "Apothecary-General and Opium Examiner," an appointment which in certain respects is the same as that of Medical Store-Keeper to Government at the present day. Had his health allowed him to endure the work of private practice in Calcutta, he would almost certainly have got the Surgeon-Superintendentship of the General Hospital. Indeed a letter from Dalhousie makes this certain. Then came the Mutiny, and Grant had hard work to keep the troops well supplied with medical appliances, and on the close of the field operations he was thanked by the Government of India for his great zeal, foresight and practical ability. In November 1860, he sent in his resignation of the service, and he went home in February 1861. He slowly recovered his health at home and lived to the good old age of 83 years.

The second part of this interesting volume is devoted to Dalhousie's career and to a defence of the Governor against political attack on his policy of annexation. These pages are of value to the historian, but we cannot linger on them.

The Indian Medical Service has good reason to remember Alexander Grant, it was his loyalty to the service and influence with Dalhousie that led in 1856 to the writing of that memorable

Despatch which was the first liberal and enlightened acknowledgment of the claims of Medical Officers by any British statesman. On this point also Grant had a long correspondence with Sir James Outram, and we will quote in another column some extracts from Outram's great Minute on the Indian Army.

We strongly commend this book to our readers and are glad that the life and career of another veteran of the service has been given to the world.

Nothnagel's Encyclopædia, Variola, Vaccination, Cholera, Varicella, Erysipelas, Whooping Cough and Hay Fever—Edited by Sir J W Moore, F.R.C.P. W B Saunders & Co Philadelphia and London, 1902

THIS is another volume of that magnificent contribution to the literature of medicine known as Nothnagel's "Encyclopædia of Practical Medicine," which in its English dress bids fair to be the leading authority in medicine for years to come.

The present volume, ably edited by Sir J W Moore of Dublin, deals with subjects of vast importance, and the chapters, or rather monographs, on small-pox and vaccination are recognised everywhere as the most complete and triumphant vindication of vaccination yet published. Dr Immerman's article on vaccination is especially of value, and the 134 pages devoted to the subject leave nothing to be desired, they are replete with facts, figures, and opinions capable of overthrowing the most plausible manipulations of the "Antivaccs." The chapter on "Variolation" or inoculation of small-pox is of special interest to the reader in India, where unfortunately this pernicious small-pox-spreading practice is still largely, if secretly, performed. In Europe the practice began to be general about 1717, the year in which the courageous Lady Mary Woiley Montague allowed her son to be inoculated, and it lasted up till the discovery of Jenner in the end of the century led to its abandonment as unnecessary as well as dangerous, but as our author says—"Inoculation succumbed, but her fall was no inglorious one, for she fell before the power of a superior opponent. For all time to come it may be said of inoculation with a better right than of many another transitory procedure in the realm of medical prophylaxis. "*In magnis valuisse, sat est*." The chapter on vaccination is a masterly one, and well worthy of study.

To one accustomed to the dogmatic pronouncements of medical text-books, it will cause surprise that some eight pages are devoted to the question of the relation between small-pox and chicken pox, and we feel relieved when we read that our author (Von Juergesenn) considers that the supporters of the 'dualist' theory of the essential difference of the two diseases have "the better ground for their belief," we join with the English

Editor in protesting against the absurd statement made in almost every text-book that chicken-pox is a "children's disease" only

The chapter on Cholera (*Asiatica* and *Nostrias*) is good, but contains nothing new. The history of Asiatic cholera is briefly given from the memorable outbreak in Bengal in 1817 to the recent invasion of Hamburg. Of course the author looks upon water as the chief means of spread, but does not overlook the possibility of its spread by flies.

The account of the symptoms are good, but we do not approve of the misleading expression "cholera typhoid" which is called an important and most frequent sequela. This expression means only that a *status typhosus* exists, and we must prefer to apply to it the term "comatose state." This state may result from many causes, but the physician who does not know the state of his patient's kidneys is very imperfectly equipped either for prognosis or successful treatment.

The description of the anatomical changes is very complete. As regards diagnosis our author says "that in the larger number of outspoken cases the diagnosis is easy." This is certainly true during an epidemic, but there must be few of us who have not hesitated about the diagnosis in the beginning of an outbreak or in a "cholera season." The fact is till we know exactly the relation of the "preliminary diarrhoea" and of cholera *nostrias* to true cholera there always will be doubt. We need not follow our author along the, to our readers, well known path of prophylaxis, we turn to the section on treatment, and here we find emphasis the sound and practical advice of treating every diarrhoea, the formula for Lorenz's "cholera drops" is given, it consists of tincture of opium, wine of ipecac, tincture of valerianated ether and oil of menth pip.

If, says our author, the treatment commences late, the best treatment is calomel 3 to 5 grains every couple of hours till green "calomel" stools appear. The author believes in a certain "bactericidal action" of calomel, but is wisely sceptical of the multitude of other drugs recommended by numerous writers. We read that one daring surgeon opened the intestine and washed out the bowels with disinfectants and are not surprised to learn that the result is politely called "negative."

As regard the treatment of the actual cholera attack we are told that, so long as no vomiting exists, improvement is possible by opium and calomel. When vomiting begins, the usual treatment for this condition must be followed. Our author informs us that "In India the subcutaneous injection of watery extracts of opium is often employed." Where this bit of information was derived from we cannot say. The necessity of giving water is insisted upon, and hypodermoclysis is advocated. This method is said to have been introduced by Cantani in 1865, the striking (if temporary) first effects of intravenous transfusion are also pointed out.

Our author defines *Cholera Nostrias* as "all attacks of illness which simulate Cholera *Asiatica*, or its mild forms cholerae and cholera diarrhoea, but which are not produced by the specific microbe of Asiatic cholera."

This, though a somewhat negative definition, is satisfactory, in that it states that the well-known forms of acute diarrhoea are not cholera. Such cases the present writer described some years ago under the head "Hot Weather Diarrhoea" as *Cholera Nostrias* is a disease of all countries. As Finkler and Prior have found in cases of cholera *nostrias* a comma bacillus with a certain resemblance to the vibrio of Asiatic cholera, our author considers that some cases of the milder disease stand in "the same relation to Cholera *Asiatica* as varicella to small-pox, rubella to measles, epidemic icterus to yellow fever or simple gastric fever to typhoid."

Practically the diagnosis of Cholera *Nostrias* depends upon the fact that it is milder and less dangerous than Asiatic cholera, and has not the same inclination to epidemic extension.

The important fact to remember is that hot-weather diarrhoea may clinically strongly resemble true cholera and may be attended with suppression of urine, profound collapse, and individual cases may even be fatal. We believe that this is the real explanation of many cases of so-called "sporadic" cholera, especially those occurring as isolated cases in jails and in the persons of prisoners many months in jail where infection from without cannot be traced.

We have not space to devote to the monographs on erysipelas and whooping cough, but may direct the reader's attention to the admirably complete account given of "Bostack's summer catarrh" or hay fever, as it is usually called. We have nothing but praise for this valuable volume.

A Text-book of the Diseases of the Ear.

By Professor DR ADAM POLITZER of Vienna. Translated at the personal request of the author, and edited by MILTON J BALLIN, Ph B, M D, and CLARENCE L HELLER, M D. Fourth Edition, Revised and Enlarged. Demy 8vo, pp xvi and 884. 346 illustrations. Price, 25s nett. London Messrs Ballière, Tindall & Cox, 1902.

THIS is a translation of the fourth edition of Professor Politzer's well known work upon the diseases of the ear. Two previous editions have been translated, but neither were made, like this one, in Vienna by two of his assistants, under the eye of the master. The result is that this comprehensive treatise covering the whole field of otology has had justice done to it, and that the valuable contributions made to aural surgery by the author—even the latest—are described with an amount of care and detail not to be met with outside his original monographs. Detailed criticism or lengthy description is out of place in noticing a work like this, which has become a classic, but a few particulars may be given of

the sections which are more especially valuable to the general practitioner

The anatomy and topography of the middle ear are described with considerable detail, but it is a pity that more illustrations are not given, such as those of R F Godhe in Cuitis's translation of Broca and Leibel-Baibou's work on 'mastoid abscesses,' showing the relations of the various important parts to each other and to the surface. Some of the really splendid pictures in Bruhl and Politzer's Atlas of Otology might have been introduced with advantage to the clearness of the text

A considerable portion of the entire work is, as might be expected, taken up with suppurative otitis media and its complications. The diseases of the mastoid process with special reference to the operative opening of its cells is particularly well done and thoroughly up to date. Among others Ballance's plastic operation is described and his plates reproduced, but the author states that he has not tried it. He considers that on anatomical grounds it is only applicable to cases where primary union may be anticipated, and that it is unsuitable in cases where, 'owing to the extensive opening in the mastoid process, or to the exposure of the infected dura mater or sinus, it is necessary to treat the wound through the retro-auricular opening, in such cases it is impossible to keep the wound open for a long time on account of the great size of the external mastoid flap'. In primary forms of *acute* mastoiditis the author considers that antiphlogistic treatment is usually efficient, but in inflammation of the mastoid cells produced by influenza, diphtheria, scarlet fever, tuberculous and syphilis, it is seldom possible to check the formation of an abscess in the mastoid process. If symptoms of abscess formation have continued for ten days, associated with profuse otorrhœa, he operates. Earlier of course if brain symptoms are present. Otherwise he has found that opening the abscess too early has an unfavourable effect on the course of the disease and on the process of healing. Pneumatic mastoid processes form an exception to this rule, as in them the abscess is one large one even within a few days and not a series of separate pus foci as in diploetic and mixed forms of mastoids. Usually simple opening of the mastoid suffices for cure. If the bony wall between the abscess and the antrum is softened or if granulations have grown into the antrum or if symptoms of brain or epidural abscess are present, then the antrum must also be opened. Within the mastoid cells become involved in the course of *chronic* middle ear suppuration the antrum is almost invariably involved. Conservative treatment is then only indicated when the process runs its course without symptoms. Whenever pains in the mastoid point to danger of the suppuration extending to the meningi or lateral sinus, the necessity of opening up the abscess is clear

The indications for going beyond this and performing the radical operation, *i.e.*, changing the tympanic cavity, attic and antrum into one common cavity, are various and given with much clearness by the author who makes a somewhat mild protest against the frequency with which some specialists perform it. The following sentence deserves quoting: "It must also be borne in mind that, by performing the radical operation, which must always be looked upon as a trying surgical procedure, the patient is compelled to give up his work for weeks or months, that not infrequently the hearing gets worse after the operation and that the operation is by no means an absolutely reliable guarantee that the otorrhœa will be cured." These weighty words should restrain operative zeal unless the indications are very clear.

As regards the operative treatment of sinus phlebitis of otitic origin, Professor Politzer considers that the laying bare and opening of the sinus is indicated in all cases in which the aural affection runs its course with continuous high or remittent fever, whether the latter is associated with rigors or not. The operation is performed by exposing the sinus after the mastoid process has been opened and the radical operation performed. The nature of the contents of the sinus is ascertained by an exploratory puncture with a Pravaz syringe. If the sinus contains fluid blood, and if the pyæmic symptoms are slight, the sinus should not be opened. If the result of puncture is negative, or if pus is present, the sinus should be opened. Thrombi are then removed with forceps or curette until blood begins to flow, a tampon of gauze being then immediately used, aspiration of air is guarded against by compressing the lower part of the sinus with an iodoform gauze tampon before opening it, and by keeping the patient's head low. The wound may also be kept full of sterilized normal saline solution. Professor Politzer regards the question of ligaturing the internal jugular vein as not yet settled. He agrees with Jansen in thinking that its ligature is indicated if rigors and fever continue after the removal of the thrombi from the sinus. The favourable results after ligature cannot be taken as being due to the operation, he says, as recovery often occurs after clearing out the sinus without ligation of the vein, and it is beyond all doubt that, in spite of ligature, septic matter may enter the blood current from the infection focus in the sinus through collateral venous channels. There is a brief but useful section devoted to the 'Diseases of the Nasal Cavity, the Nasopharynx, and the Accessory Sinuses of the Nose with Reference to Diseases of the Middle Ear'.

Altogether this is a very good translation of a most excellent text-book and well worthy of close study by all interested in otology. The full index and complete bibliography add much to the value of the work.

A Manual of Medicine—Edited by W H ALLCHIN, M D (LOND), F R C P, F R S (ED), Senior Physician and Lecturer on Clinical Medicine at the Westminster Hospital, &c London Macmillan & Co, Ltd, 1902 Pp 493 Price, 7s 6d net Vol IV

THE volume under review deals with Diseases of the Respiratory and Circulatory Systems, and fully maintains the high standard of the three preceding volumes

The work opens with an excellent account of the Anatomy and Physiology of the Respiratory System by Leonard Hill, who also contributes a comprehensive article on the Physiology of the Circulation Both articles are good, and after a perusal of them, the practitioner will find himself *au fait* with the latest physiological work on circulation and respiration

Diseases of the Upper Respiratory Tract are dealt with, very briefly, by Dr Lewis Smith It is questionable whether it would not have been better either to extend the space allotted to this subject, or to refer the reader to one of the many excellent handbooks on diseases of this region now available, as it is impossible for any writer to give an adequate account of the disorders of this important region in twenty-five pages, but we might, at least, demand from the writer a little more consistency, as we find that although he gives full details as to the surgical treatment of adenoids of the Naso pharynx, he refers the reader to surgical manuals for a description of the *modus operandi* of plugging the posterior nares in epistaxis

Dr Hector Mackenzie writes the account of diseases of the Lower Pulmonary Tract, and for this section we have nothing but praise The part devoted to Morbid Anatomy and General Pathology is well illustrated by means of judiciously selected plates General Symptomatology and Physical Examination of the Chest are fully dealt with, the articles on Dyspnoea and Pain being specially good, the writer appears to be somewhat sceptical as to the value of auscultatory percussion, but gives a succinct account of the results obtained by examination of the chest by means of Röntgen rays Pulmonary Diseases are fully treated—thirty pages being devoted to Pulmonary Tuberculosis—a very lucid and up-to-date account of the disease being given The Serum Diagnosis of Tuberculosis is discussed, but Dr Mackenzie does not give any definite opinion as to its value Under the heading of Prophylaxis, he gives the rules drawn up by the National Association for the Prevention of Consumption, but he goes even further than the Association in his recommendations, as we find, that he forbids those in whom the progress of the tubercular disease has been arrested, to marry, if they cannot lead an open-air life, although we may agree with this recommendation, we doubt if the advice will be taken by those about to marry

A short but concise account of Diseases of the Pleura is contributed by Dr De Havilland Hall, in which a reference is made to the method of Cytodiagnosis of Widal and Ravaut for differentiating the various pleurisies, and a good account is given of that rare and little known disease—Mediastinitis

Nearly 150 pages are devoted to Diseases of the Circulatory System, the whole of this section being written by Dr J Mitchel Bruce, it need only be said that the account given upholds the well-known reputation of the writer

The editor contributes two short articles,—one on Disease of the Diaphragm, and the other on Oedema, the latter especially being a very good account of this morbid condition

In the important matters of printing, paper, etc, the book is in all respects good, the illustrations and diagrams are carefully selected, and its low price places the work within the reach of many to whom the larger systems of Allbutt and others are not available

THE BOMBAY MEDICAL AND PHYSICAL SOCIETY

THE November issue of the *Transactions* of this Society show that it continues to flourish Major Meyer, I.M.S. on going on furlough, handed over the duties of Honorary Secretary to Captain E. F. Gordon Tucker, I.M.S.

At the ordinary meeting in November Lieutenant-Colonel W. G. H. Henderson, F.R.C.S.I., I.M.S., was in the chair Major H. Herbert, F.R.C.S., showed some patients affected with "Superficial punctate keratitis" which is a common complaint in Bombay City, and liable to become epidemic at the close of the rains, though commonly regarded as a rare affection Many cases, however, can only be detected by staining the cornea with fluorescein, which showed scattered dots on the surface of the cornea Dilute yellow oxide of mercury ointment and in acute cases atropin sufficed for treatment.

Two papers were read on the subject of typhoid fever in Natives of India, by Lieutenant-Colonel Henderson and Major L. F. Childe, I.M.S. Colonel Henderson's case was remarkable for the absence of all abdominal symptoms with marked bowel ulceration found *post mortem* Major Meyer gave notes of seven cases, two Brahmans, one Parsi, one Mahomedan, two Goanese, and one Bombay East Indian, thus fairly representing the Native Communities of Bombay Dr T. B. Nariman remarked that he saw cases pronounced enteric on account of Widal's reaction which, twenty years ago, he named 'typhoremittent.' Dr N. F. Surveyor was apparently not inclined to put a too exclusive trust in the diagnosis by Widal's reaction alone Mr Arthur Powell had had eight cases of enteric among the Bombay Police in one year, and in six cases the Widal reaction was complete in dilutions of 1 in 80 or 1 in 100 Major Meyer referred to a curious case in a case strongly resembling one of Major Childe's above mentioned This case proved neither to be typhoid nor Malta, nor did it react with the bacilli of Gaertner's bacillus Captain E. D. W. Greig, I.M.S., read another paper or further work on Immunity—a continuation of the paper by him which we have already published

Current Literature.

OBSERVATIONS ARISING OUT OF THE GEOGRAPHICAL DISTRIBUTION OF STONE AND CALCULOUS DISORDERS, BY REGINALD HARRISON, F.R.C.S.*

IN offering a short paper on the subject of stone it is with the hope that it may draw from some of the distinguished members of this Congress, now meeting for the first time in Cairo, information which will add to our knowledge of its causes An occasion such as this, when many are present from various parts of the Eastern world where these disorders abound, or, on the

* A paper read at the Egyptian Congress of Medicine

other hand, are comparatively rare, would seem opportune for the purpose. My remarks will apply to those calculi which are associated with the renal excietion.

The points to which I more particularly desire to draw attention may be formulated by the questions (1) has the study of the geographical distribution of calculous diseases added to our knowledge of their causes, and (2) if so, to what extent?

I do not think it necessary to remind you at any length of the facts showing that the distribution of stone throughout the world is very varied and irregular. In my own country, with her colonies and dependencies, there is abundant evidence of this. In some districts of England and the British Isles, as for instance in the eastern counties, stone is common, whilst in other parts, amongst which may be included the whole of Ireland, it is remarkably rare. In British India, as is well known, these contrasts are still more remarkable. In the United States and Canada similar differences exist, but not to the same degree.

In analysing the evidence deducible from the fact that such varieties are to be found in the distribution of calculous disorders, stress has been laid upon certain differences in the conditions under which the inhabitants of respective countries live. These have reference mainly to the food and drink supply, to climate and to states incidental to the latter, for instance, a local liability to certain parasitical affections, or to physical conditions of the urinary apparatus favourable to these concretions.

In the course of last year an important discussion took place at the meeting of the British Medical Association at Cheltenham on the subject of stone in the tropics, which had the advantage of being opened by my colleague Mr Freyer. Though there was considerable variety in opinion as to the relationship of water containing lime salts in excess and liability to stone, there were two conclusions arrived at upon which I do not think any doubt as to their correctness can be entertained. And I say this not because I have ever practised in a stone district, or had any exceptional opportunities of studying the etiology of calculous affections, but from having performed a large number of operations for stone on persons who have presented themselves under various circumstances at all periods of life, and often with other complications.

In the first place, Dr Patrick Manson pointed out two kinds of calculi whose etiology was positively known, he referred to those formed on foreign bodies, and on the ova or debris of the bilharzia. The second conclusion was that emphasised by Mr Freyer to the effect that about one third of the cases of stone he had operated upon in England were complicated with enlargement of the prostate. Taken in conjunction with the statement that there was ten years' difference in the expectancy of life in favour of the inhabitants of England as compared with India, this indicated that structural obstruction, as a consequence of age or otherwise, must be regarded as a factor in the production of urinary calculi.

The recognition of the uniformity of the process by which a stone is constructed on a foreign body consisting, for instance, either of a piece of catheter accidentally left in the bladder, or upon a product of the bilharzia, is one of the first importance. Here the process of stone making is uninfluenced by food, drink, climate, or by any other condition to which the human body is liable, and illustrates a natural law which governs the construction of this form of calculus, in whosoever it occurs. The retention of a foreign body within the urinary apparatus is never immediately followed by the formation of any other but one kind of deposit, and is always the same whether happening to the Indian in the Punjab, the Egyptian in Cairo, or the Russian in Siberia.

What, however, we further want to determine is a practical explanation of the formation of other calculi applicable alike to the isolated case in places where stone is a rare disorder, to countries where it may be said to be

endemic, and to the varied conditions under which its geographical distribution shows it to exist.

It would seem, partly from a study of its incidence and history, and partly from experiment, that it is unnecessary to go outside the field of natural phenomena to explain the manner in which stone is formed and the causes which lead to it. Rainey's theory and demonstrations relating to molecular coalescence cover both.

For constructive as well as for conservative purposes we see these views beneficently and beautifully utilised in the formation of shells and other kinds of protection for some of the lower animals, on the other hand, we find bodies similarly produced in the shape of stony concretions which are destructive in their effects, and serve, as far as we know, no good purpose in the human economy other than as testimonies of obedience to natural laws.

That Rainey's views are applicable to human urinary calculi I do not think can be doubted. 'It is a matter of some surprise to me that they are not more generally recognised in this application and utilised as a basis for a preventive treatment which would then cease to be empirical.'

In his able article on urinary calculi, which commences with a notice of the geographical distribution of these bodies, Dr E. L. Keyes,² of New York, states in reference to stone formation "the experiments begun by Rainey and improved upon by Ord are the first serious efforts towards a scientific appreciation of the subject of which we have any record." Nor is other testimony wanting to support these views. The late Dr Vandyke Carter,³ who devoted so much attention in India to this subject, writes "It seems to me that the necessary conditions for the operation of molecular coalescence may at times well occur in the living human subject. Thus an excess of mucus, perhaps altered in character, would furnish a colloid medium with which uric acid, the urates and oxalates, could combine in the manner described."

I will pass on to consider (1) what the acceptance of Rainey's views on molecular coalescence relative to the causes and formation of stone implies, and (2) the probable relationship of some facts obtained from the study of geographical distribution of calculus thereto.

(1) In discussing this it may be asked, can a stone analogous with a urinary one be made artificially by Rainey's process outside the human body? There can be no doubt of this provided Rainey's directions are accurately followed. A reference to his drawings is sufficient to indicate this. Though a complex process, involving careful attention to details of a chemico-physical nature, his demonstrations can be readily repeated.

Further, the acceptance of Rainey's views implies our recognising that though the process is dependent on the presence of a material which is eventually to constitute the stone in sufficient amount, it also includes in their proper order and degrees other conditions which are equally necessary. A test tube may be replete with the salt or material it is desired to concrete, but unless other conditions supervene the process of stone making ends here.

Again, some find out by the use of various artifices in the shape of certain drinking waters, as for instance those of Contrexéville or Evian, or by means of some drugs used in this way, that though the quantity of their uric acid is not thereby diminished, they effectually prevent it concreting. Is not this, in other words, an instance of spoiling the act of stone making, or, if the process was being conducted in the laboratory, should we not speak of it as aborting an experiment by introducing an incompatible or discordant element?

¹ "On Molecular Coalescence" Churchill, 1858.

² Ashhurst's "International Encyclopedia of Surgery," vol. vi, 1886.

³ "The Microscopic Structure and Formation of Urinary Calculi," 1873.

There does not appear to be any evidence to show that excess in the urine of the salts which constitute stone is to be regarded as causes of stone other than in the sense that the man with the shot gun is more likely to bring down a bird than he with the rifle, other conditions being equal.

It should, however, be clearly understood that the processes of crystal formation and crystal concretion are distinct, and are in no sense necessarily sequential. Take the case of a healthy man of middle age and vigorous life, excreting, I will say, 10 grains of uric acid a day. If he were only to void half this with his urine and concrete the remainder it is obvious that he might form a stone of this material alone, weighing not less than half an ounce, in something like forty-eight days.

(2) In the second place, geographical considerations would seem to indicate the presence in certain districts of a fortuitous concurrence of conditions necessary to effect a concretion of the normal or abnormal supply of concretable material the individual inhabitants are capable of supplying—or as the late Dr. Ord¹ puts it, “if the causes of the varying prevalence of calculous disease in different communities and regions are to be fully and carefully examined such subjects as constitutional proneness or indisposition to vesical catarrh, habits of life, diet, or regimen, or local conditions of soil, water, and climate, which can hinder or promote the secretion of mucus or the occurrence of irritation in the urinary tract, must be carefully treated. And if such observations are applied to practice we may hope to find that the prevention of stone becomes truly possible through the prevention of the local conditions which constitute the soil in which it is sown and grows.”

I am putting these matters forward in the hope that it may arouse further attention to Ramey's important work in connection with this subject. I feel that its importance lies chiefly in two directions. First, as furnishing a true basis for investigating many points of interest relative to the formation of stone. Much of our work in this field, I fear, has fallen short of what we desired, not from ignorance of what Ramey did, but from failure to reconcile its bearing upon the formation of concretions as observed both in man and animals. And, secondly, because it presents reasons for lines of preventive treatment which have not been adequately appreciated or utilised.

And I would not wish it thought that these remarks, which have arisen out of reflections relating to the distribution of calculous disorders, are mere expressions with no practical basis to support them. Let me occupy a few moments longer with the applied side of my argument.

Some time ago I published² a paper which contained an analysis of 110 persons, upon whom I had recently operated for stone in the bladder by various methods, which occurred in a consecutive series. Though this number included many serious cases, in persons of advanced age or broken down constitution, the mortality only amounted to six, of which two died four weeks after operation. Litholapaxy was the operation of selection, and was employed in 101 instances. I was quite satisfied with this degree of success so far as the removal of the stones was concerned, as it appeared equal to any results that had hitherto been obtained in a country where enlargement of the prostate was a frequent complication of stone in the bladder.

I was not, however, so satisfied with the knowledge that out of these 110 persons 23 were known to have had recurrences of stone to some degree. In analysing these I found they might be divided into two classes: first, those which were entirely limited to the bladder, where the recurrence was invariably in the form of aphosphatic concretion, and secondly, those where it was to

be attributed to a more recent formation and descent from the kidney and its detention in the bladder by a large prostate.

Since these observations were made I have succeeded in most instances, where my directions were carried out, in effectually preventing recurrences of both kinds taking place. Time will not permit me to describe in detail the means that were adopted for the prevention of those relapses which were traceable to enlargement of the prostate and to the insanitary condition of the bladder it had caused. This has been described in a paper¹ which has also been recently published.

Inability to recurrence by fresh descents from the kidney, when indicated, has been successfully dealt with on those lines which I have advocated in connection with Ramey's views of molecular coalescence. Here in various ways I interposed artificial conditions which appeared to about the process of concretion.

Nor will time allow me to describe the various agencies which have been employed in the form of flushing and otherwise for spoiling the process of concretion by molecular coalescence. In addition to the well known properties of Contrexéville water, and probably of other spas acting on the same principle such for instance as Wildungun or Harrogate, salicylate of soda, benzoate of soda, urotropine, and borate have been used for this purpose. Sandal-wood oil and turpentine have also proved serviceable in this way.

In the course of these investigations a preparation was tried which is described in Paris's “Pharmacologia” (5th ed., 1822), called “Dutch drops,” which was largely used as a prophylactic against stone and gravel a century ago. It is a mixture of oil of turpentine, tincture of guaiacum, spirit of nitric ether, with small portions of the oils of amber and cloves. I have no doubt from a trial of it of its efficacy. It may be conveniently taken in capsules. In several instances I know of, though it has not stopped the excretion of uric acid, it apparently has prevented the crystals concretizing, and I may say the same observation has been made in the cases of some persons changing their residences and other modes of life.

Some years ago my attention was called to a salt called borate by a paper by Dr. Kohler,² of Boston, which is well worth attention in connection with the preventive treatment of stone. I have employed it for the last twelve years for the purpose I am now referring to. Though by no means an exceptional instance, the following case, where this preparation was largely used, is of so much interest that I will briefly narrate it, and at the same time show the specimen. The action of borate seems in this instance to have contributed to produce what Ramey speaks of as “a process of disintegration,” which is of equal importance with the constructive act.

In October, 1899, I saw a gentleman, aged 70 years, on the advice of Dr. Johnstone, of Langport. He had undoubtedly one or more stones in his bladder of some size, and the urine contained an excess of uric acid. Though the symptoms were marked they were not urgent. His prostate was somewhat enlarged and so had commenced to trap the somewhat abundant crystals and concretions of uric acid which his kidneys furnished. He did not wish to be sounded or to submit to any operative treatment whatever. I mention this particularly, as mechanical treatment could not have had any thing to do with what subsequently followed. He wished me to prescribe for him something which might possibly arrest the further formation of stone, and thus I accordingly attempted.

I heard nothing further about him, after a lapse of two and a half years, until a few weeks ago, when his doctor again wrote me and sent me the specimen I am showing you to day. It would appear from Dr. Johnstone's account, that about two years after the only

¹ “The Influence of Colloids upon Crystalline Form and Cohesion” London, 1879.

² *The Lancet*, 1898.

¹ *The Lancet*, Feb. 9, 1901.

² *Klinische Wochenschrift* Berliner, November 3, 1879.

occasion I have seen him and he commenced to take the boric acid, he began to pass fragments of stone and "although they have sometimes caused pain in coming through the urethra, there has only once been any hæmorrhage and that very slight." The fragments thus expelled weigh two drachms, and consist mainly of uric acid with a slight coating on some of them of phosphates.

In closing these remarks, which, though arising out of geographical considerations relative to the subject-matter, have been somewhat discursive, I feel that as in other cases of preventable disorders that of stone, particularly when it occurs in endemic proportions, is deserving of further notice. It is a symptom and not a disease.

I have read with satisfaction in an issue of the *Indian Medical Gazette* specially devoted to the subject of stone (August, 1900), that my friend Dr Keegan, whose work in India has so largely contributed to our knowledge, suggests that the Government of India, in places where stone in the bladder is so common, should supply the most modern instruments necessary for its treatment, and thus save large number of lives. I would go a step further and see if measures could not be taken to prevent concretions occurring. I cannot help thinking that more might be done in this direction, and that this aspect of the question is worthy of the consideration of so important a gathering.

Service Notes

IMITATION is the sincerest form of flattery, we are told, hence the readers of this paper may read with interest of the proposal to establish a Medical Service for the American possessions abroad on the lines of the Indian Medical Service. The following is an extract from the draft of the bill submitted to the Senate—

"To establish a permanent Medical Corps similar to the British East Indian Medical Service, whose duty it will be to serve the military and civil services of the United States in those countries which, while under the United States Government are separated as to their people and country from the United States proper. It is felt that properly qualified medical men will not come in sufficient numbers to the tropics to enable the officials and other civil employees of the Government to obtain that expert medical attention which they would receive in the United States, unless incentive is offered them, that men who have not devoted time and study to tropical surgery and medicine cannot attain to that proficiency which will be given by those who are specially trained for this work.

"Men experienced as medical officers are accustomed to sustain discipline and render loyal allegiance when acting under the orders of superiors. The provisions of this measure at once place a body of men trained in Medical military tropical service at the command of the United States, to be used either by the civil or military authorities as the necessities may require.

"That when serving under the authority of the civil governments they must be subject to and act under civil law and civil superiors.

"That with a fixed tenure of office, and provision for old age, a better quality of medical service may be had for less cost.

"That these men are needed particularly in the care of the constabulary and other native forces, and in the management of epidemic disease, falling under the jurisdiction of civil governments as well as to replace in the army those volunteer surgeons who are soon to be discharged by expiration of law and the contract surgeons who are now employed in the tropics."

It may be noted that this service is to provide medical officers for both civil and military employment.

SOME officers of the Indian Medical Service in Calcutta gave, on Saturday night, February 7th, a most successful complimentary dinner to Mr Jonathan Hutchinson, F.R.S., F.R.C.S., who is now a visitor in India.

Lieutenant-Colonel Ranking was in the chair, and in addition to the guest of the evening and his son, Mr R. J. Hutchinson, H. H. the Lieutenant Governor of Bengal, Mr Bourdillon, Colonel T. H. Hendley, O.B.E., I.M.S., and Colonel B. O'Brien, I.M.S., were guests. The following I.M.S. officers were hosts—Captain R. Bird, Lieutenant-Colonel Bomford, Major W. J. Buchanan, Lieutenant-Colonel R. H. Charles, Captain T. H. Delany, Captain B. H. Deare, Lieutenant-Colonel E. Dobson, Major F. C. Drury, Lieutenant-

Colonel Gibbons, Lieutenant-Colonel G. A. Harris, Captain T. H. Kelly, Captain Harold Meakin, Captain J. Mulvaney, Lieutenant-Colonel R. D. Murray, Lieutenant-Colonel Peck, Major Pilgrim, Major Prain, Captain Rait, Lieutenant-Colonel Ranking, Captain L. Rogers, Lieutenant-Colonel R. L. Dutt, and Lieutenant-Colonel R. O. Sanders.

Lieutenant-Colonel Ranking proposed and Lieutenant-Colonel R. C. Sander seconded the toast of the guest of the evening in felicitous speeches, after which Mr Hutchinson returned thanks in a speech full of appreciation of the medical work he had seen since his arrival in India. The Lieutenant Governor of Bengal also spoke in most appreciative terms of the work of the medical profession in India.

Captain B. H. Deare was in good voice, and as usual added much to the success of the dinner by his fine singing.

"BART'S" Hospital was strongly in evidence at the Hutchinson Dinner, viz., Mr J. Hutchinson himself, Colonel Hendley, Lieutenant-Colonel Bomford, Lieutenant-Colonel Ranking, Captain Bird, Captain Meakin, Captain Kelly and Major H. Pilgrim.

Of the London Hospital where Mr J. Hutchinson had worked, so many years there were as representatives, Lieutenant-Colonel R. C. Sanders (*retd.*) and Captain J. Mulvaney.

CAPTAIN G. O. F. SEALY, I.M.S., is employed on plague duty in the Central Provinces.

THE services of Major O. Pinto, I.M.S., on return from leave, are placed at the disposal of the Military Department.

MAJOR GEE, I.M.S., has gone to Somaliland for field service.

LIEUTENANT W. H. CAZALY, I.M.S. officiates as Medical Officer, 25th Bo. Rifles, *vice* Captain R. W. Anthony, I.M.S., who has gone into civil employ.

LIEUTENANT COLONEL H. ST. C. CARRUTHERS, I.M.S., Medical Storekeeper to Government, Madras, has returned from England.

CAPTAIN G. H. BAKER, I.M.S., is posted as Civil Surgeon of Cawnpore, and Lieutenant-Colonel J. F. McLaren, I.M.S., as Civil Surgeon of Allahabad.

CAPTAIN T. W. A. FULLERTON, I.M.S., is again placed on special plague duty in Allahabad District.

WE regret to record the death of Honorary Major J. Forsyth, I.M.S. Department, for many years in medical charge of the Viceroy's Staff.

LIEUTENANT COLONEL FENN, R.A.M.C., Surgeon to the Viceroy, goes home on promotion, and is succeeded by Captain Armstrong, I.M.S., who acted for Colonel Fenn during last hot weather.

THE services of Lieutenant Mackelvie and Lieutenant E. O. Thurston, I.M.S., are to come to Bengal for civil employ.

LIEUTENANT J. FOREST, I.M.S., was ordered to assume medical charge of the 11th Coorg Infantry and the Boer Camp Hospital.

THE services of Captain H. Kirkpatrick, I.M.S., are placed permanently at the disposal of the Government of Madras.

THE following promotions and appointment have been made among Agency Surgeons under the Foreign Department with effect from the dates specified—

Consequent on the delocalisation of the appointment of Civil Surgeon of Quetta (which was formerly a localised appointment of the first class), and with effect from the 25th October 1902—

Lieutenant-Colonel P. A. Weir, M.B., Indian Medical Service (Bengal), an Agency Surgeon of the 2nd (officiating 1st) class and Officiating Administrative Medical Officer in Central India, to be an Agency Surgeon of the 1st class.

Consequent on the death of the late Colonel A. H. C. Dane, M.D., Indian Medical Service (Bombay) an Agency Surgeon of the first class having been placed at the disposal of His Excellency the Commander in Chief in India, and with effect from the 30th October 1902—

Lieutenant-Colonel J. Crofts, M.D., Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class, to be an Agency Surgeon of the 1st class.

Captain J. W. Grant, M.B., Indian Medical Service (Bengal), is confirmed as an Agency Surgeon of the 2nd class, with effect from the 30th October 1902.

Lieutenant Colonel P. A. Weir, M.B., Indian Medical Service (Bengal), an Agency Surgeon of the 1st class is confirmed as Administrative Medical Officer in Central India with effect from the 30th October 1902, *vice* the late Colonel A. H. C. Dane, M.D., I.M.S.

LIEUTENANT COLONEL M D MORIARTY, M D, I M S, is promoted Colonel to date from 25th October 1902, vice Colonel G McB Davis retired

THE services of Military Assistant Surgeon T Baldry are placed at the disposal of Government of Bengal for civil employment

ON return from leave Major R I Marks, I M S, is posted as Civil Surgeon of Bijnor, U P

ON the promotion of Colonel M D Moriarty, I M S, Lieutenant-Colonel J F MacLaren, I M S, becomes a Civil Surgeon, 1st class

ON the return from S Africa of Lieutenant-Colonel S J Thomson, C I E, I M S, Major J Chaytor White, I M S, reverts to his appointment as Deputy Sanitary Commissioner, 1st Circle, U P

CAPTAIN C HUTCHESON, I M S, is posted on plague duty, Meerut District, as a temporary measure

ON return from furlough the services of Major O Pinto, I M S, are placed at disposal of the Home Department

THE R I M S *Hordinge* has been fitted up as a Hospital Ship for the Somaliland Field Force

THE *Journal of Tropical Medicine* of 1st January contains a portrait of Major Ronald Ross, I M S (retired)

MAJOR G H BAKER, I M S, is transferred as Civil Surgeon from Agra to Cawnpore on Lieutenant-Colonel H P Lukis, I M S, going to Agra.

LIEUTENANT COLONEL F J MACLAREN, I M S, goes to Allahabad as Civil Surgeon, vice Lieutenant Colonel B O'Brien, I M S, promoted

THE services of the following Medical Officers were placed at the disposal of the Punjab Government for plague duty — Captain S B Smith, I M S, Captain P B Haig, I M S, Captain R G Turner, I M S, Captain S A Harris, I M S, Captain W E. Scott-Moncrieff, I M S

CAPTAIN P W O'GORMAN, M D, D PH., reverted to Civil Employ in the Punjab on the return of Lieutenant-Colonel D P Macdonald from furlough

CAPTAIN L G R WHITCOMBE, I M S, was appointed to act as Civil Surgeon of Jacobabad on 1st January in addition to his regimental duties

ASSISTANT SURGEON P A CORDEIRO was appointed to act as Civil Surgeon of Panch Mahals on 10th January

SIR W WILSON, R A M C, who was P M O in the Transvaal, has been commissioned to write the medical history of the war

A MOVEMENT has been started in America to erect a memorial to Major Walter Reed of the United State Army Medical Department, whose name will be remembered in connection with the mosquito theory of yellow fever

MAJOR J T DALY, I M S, 9th Gurkha Rifles, is granted furlough for one year

THE Secretary of State has sanctioned the following conditions in order to place the probationers of the Indian Medical Service on the same footing as those of the Royal Army Medical Corps (1) Their title is changed from Surgeon on Probation to Lieutenant on Probation (2) Their pay (exclusive of allowances) is raised to 14s a day (3) Their commission as Lieutenant bears the date on which their course of instruction in England commences They will not, however, be gazetted until they pass the final examination (4) A Lieutenant on probation, who at the time of passing the examination for admission to the Indian Medical Service holds or is about to hold a resident appointment in a recognised Civil Hospital may be seconded for a period not exceeding one year, during which he will receive the appointment While seconded he will receive no pay from the Indian funds, but his service will reckon towards promotion, increase of pay and pension.

LIEUTENANT A R GREENWOOD, R A M C, and Lieutenant J Cameron, I M S, are ordered to join to General Hospital at Berbera.

CAPTAIN BIRELL, R A M C, becomes Personal Assistant to P M O, Punjab Command

EVERY year more and more Indian Medical Service Officers join the ranks of those who have written a book, and as we write, two new books lie on the table, viz, Major J T Calvert's "*Intestinal Parasites*" (Bengal Secretariat Press) and Major D Simpson's "*Infants their Ailments and Treatment in India*" — both most useful books, which we will notice at length in our next issue

MAJOR TAIT, R A M C, is appointed to the medical charge of Army Head Quarters, or, as it used to be called, Surgeon to the Commander in Chief

THE following letter appeared recently in the *Pioneer*. It looks as if R A M C "increase of pay" was like the recent P & O "reductions" in fare —

"The proposed new rates of pay for the R A M C in India have already been published in your columns with the comments on them made by the *British Medical Journal*. That paper hesitates to regard them as satisfactory without further information. It adds that comparison with European rates depends on the increased cost of living in India and upon the rate of exchange. The most important factor, however, is the legal equivalent of the sovereign in rupees for the legal equivalent of English pay and allowances is the least that can be given to medical officers in India from the date of the passing of the new Warrant, i.e., 1st April 1902. Otherwise, the Home Government will be compelled to add a clause to the Warrant stating that medical officers will be on a lower scale of pay while in this country. This equivalent of English pay and allowances forms the first item of Indian Consolidated Pay.

"For the second item I quote the Indian Army Regulations, Vol 1, as follows —

"In order that officers may be prepared at all times to move at the shortest notice, an allowance out of which they are required to provide and keep the camp equipment of their rank, carriage for its conveyance, and the requisite establishments, is included in the pay and Indian allowances of the several ranks as follows — Colonel, Rs 200, Lieutenant-Colonel, Rs 150, Major, Rs 120, Captain, Rs 75, Lieutenant, Rs 50"

The sum of these two items plus Exchange Compensation Allowance is therefore the exact legal equivalent of Home (not Colonial) rates of pay. I give a table below of Home rates, taken from the *British Medical Journal*, and show the losses or gains involved by Indian service under the proposed new scale of pay

Rank	Home pay and allowances	Equivalent in Rupees, Tentage and Compensation	Proposed rate under new warrant	Loss in sterling per year	Gain in sterling per year
Lieut	£ 323 10 0	Rs 484	Rs 445	£ 31	
Capt	379 15 2	585	504	85	
" 7 yrs	400 0 0	610	562	38	
" 10 yrs	477 15 0	712	689	18	
Major	587 12 0	906	838	54	
" 15 yrs	632 12 0	964	876	70	
Lt. Col	713 15 0	1,105	1,121		13
" Senior	804 15 0	1,278	1,224	43	

To all the above losses add the Colonial allowance, say of Ceylon, and to the losses of Captains and Lieutenants add £24 a year horse allowance. It would be interesting to know who worked out the proposed rates and how he or they arrived at the conclusion that a junior Captain should lose £65 a year or a total of £325 on a tour of five years, while a senior Captain should lose only £90 in pay and allowances. Of course, they both lose £120 in addition in horse allowance, and a large amount in Colonial allowance. Why should a junior Lieutenant-Colonel gain £13 a year and a senior one lose £43? It would be futile to bring forward again all the arguments as to the necessity of mounting junior medical officers. Practically all of them own horses and cannot do their work without them. A question in Parliament would show what proportion of those ordered to the Delhi Manœuvres were mounted at their own expense, and if the

sick could have been efficiently attended if this had not been the case. Again, it might be asked if a medical officer who has already walked a round of two or three miles to his hospital and back to his quarters should be called upon to walk perhaps two miles more to attend an officer's child who is dying of heat-stroke. The withholding of horse allowance is significant of what the R. A. M. C. can expect from the Indian Government, but it must be confessed that the senior officers of the Corps are partly responsible for not forcing this urgently needed reform upon the authorities at Simla. The attitude the Government has taken up towards the R. A. M. C. is a most extraordinary one, for to give its members less pay than they receive in England is an unjust and, in view of the attitude of the medical profession, an impossible policy."

In continuation of the Editorial on I. M. S. men in the *Dictionary of National Biography* which we published in our January number (p. 28), Lieutenant-Colonel D. G. Crawford, I. M. S., now on furlough, sends us the following notes—

- Vol. 1 Anderson, James, Madras
- Vol. 25 Harwood, Sir Bussick, 1764—1778
- Vol. 35 McNeill, Sir John, G. O. B. (Bombay)
- Vol. 51 Scott, Helenus (Bombay)

Harwood belonged to the Bengal Medical Service and was, after his retirement, appointed Professor of Anatomy, and Downing Professor of Medicine at Cambridge.

LIEUTENANT COLONEL CRAWFORD also informs us that Simon Nicolson, about whom we gave a note in these columns in last issue, died in Calcutta on 7th August 1855 or only seven days after his retirement.

THE Sir John McNeill mentioned above served for twenty years in the Bombay Medical Service, was made a G. C. B., a Privy Councillor, and an Ambassador. One of the few I. M. S. officers who attained to these three high distinctions.

DURING the absence of Lieutenant Colonel R. E. S. Davis, I. M. S. at the Delhi Durbar, Captain Stodart performed the duties of Civil Surgeon, Rangoon.

LIEUTENANT L. B. SCOTT, I. M. S., takes civil medical charge of Roorkee, *vice* Major William Dawson, I. M. S., on leave.

MAJOR R. J. MARKS, I. M. S., on return from leave, is posted as Civil Surgeon to Bijnor.

WE republish the following—

"URDU EXAMINATION.—Candidates who fail to pass in Urdu, by either the lower or higher standard will be furnished with the proceedings of the Board before whom they appeared for examination (India Army Form X 891 or X 892, ~~as~~ the case may be), immediately the final decision has been recorded thereon, the rank, name, and corps of the candidate being entered on the form before it is despatched to him.

2. A candidate who is for re-examination in one subject only will be careful to preserve the proceedings of the Board furnished to him under the preceding paragraph, and will attach them to his application when submitting his name for re-examination. Should the candidate be for re-examination in either subject (a) or (b), the proceedings of the former examination will be transmitted to the Central Board with the indent (India Army Form X 783) for the necessary papers.

3. The above procedure obviates the use of the form (India Army Form X 784) referred to in G. O. C. S. Nos. 507 and 544 of 1902, which are hereby cancelled.

MILITARY ASSISTANT SURGEON W. H. HARDING is granted combined leave for 8 months and 18 days.

LIEUTENANT COLONEL C. P. LUKIS, I. M. S., becomes a Civil Surgeon, 1st Class, *vice* Colonel B. O'Brien, I. M. S., promoted.

LIEUTENANT COLONEL J. L. POYNTER, I. M. S., has been granted 4 months' extension of leave on medical certificate.

CAPTAIN N. R. J. RAINIER, I. M. S., has been granted 6 months' extension of leave on medical certificate.

MAJOR D. T. LANE, I. M. S., has been granted 4 months' extension of furlough, and Captain S. R. Douglas, I. M. S., 5 months.

MAJOR D. M. DAVIDSON, I. M. S., is confirmed as a Civil Surgeon, 1st Class, Punjab, on the retirement of Lieutenant-Colonel B. Doyle, I. M. S.

MAJOR P. W. O'GORMAN, I. M. S., M. D., D. P. H., is appointed Civil Surgeon of Karnal.

HONORARY LIEUTENANT J. T. WESTON, I. B. M. D., has got furlough for one year.

THE services of Captain G. McI. C. Smith, I. M. S., are placed at the disposal of the Punjab Government.

PROMOTION on the Bombay side is going fast. The services of Lieutenant-Colonel Greany, I. M. S., and of Lieutenant-Colonel J. McCloghry are placed at the disposal of the Commander in Chief.

ON the Bengal side the air is full of rumours of promotion, owing to retirements and taking of leave.

CAPTAIN T. JACKSON, I. M. S., M. D., is appointed Civil Surgeon of Hyderabad, Sindh, during the absence on leave of Lieutenant-Colonel Stevenson, I. M. S.

LIEUTENANT COLONEL W. G. HENDERSON, I. M. S., F. R. C. S. L., is appointed Civil Surgeon of Poona, *vice* Lieutenant-Colonel Greany, promoted to administrative rank, and Major V. A. T. Colhe, I. M. S., acts as Presidency Surgeon, 3rd District, *vice* Lieutenant-Colonel Henderson.

CAPTAIN H. M. MOORE, I. M. S., is appointed Resident Surgeon, St. George's Hospital, Bombay.

As we go to press it is announced that Lieutenant-Colonel S. Haslett Browne, M. D., C. I. E., has been appointed to succeed Colonel Hendley, C. I. E., as Inspector General of Civil Hospitals, Bengal.

MAJOR R. J. MACNAMARA, I. M. S., the Senior Officer in the Punjab Jail Department, will officiate for Major W. J. Buchanan, I. M. S., as Inspector General of Jails, Bengal, on the latter going on 10 months' leave in the middle of April.

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co Calcutta.

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BOOKS, REPORTS, &c, RECEIVED

Bombay Dispensaries Annual Report
Administration Report Hyderabad Assigned States
History of Hooghly By Lt Col D. G. Crawford, I. M. S.
Birth & Management of Children in India New Edition (Thacker, Spink & Co)
Infants and their Ailments. By Major D. Simpson, I. M. S. (Thacker, Spink & Co)
Plague Manual for Bengal (Secretariat Press)
Intestinal Parasites By Major J. T. Calvert, I. M. S. (Secretariat Press)
Diseases of the Skin. By Radcliffe Crocker 3rd Ed., 2 Vols (H. K. Lowy)
Constipation By Sherman Bigg (Ballière, Tindall & Cox)
Punjab Administration Report

LETTERS, COMMUNICATIONS, RECEIVED FROM —

Major J. T. Walsh, I. M. S., Berhampur, Major D. M. Moir, I. M. S., Calcutta. Capt. E. R. Rost, I. M. S., Rangoon. Major A. Buchanan, I. M. S., Khandwa, C. P. Major H. Herbert, I. M. S., Bombay. Lieut. F. W. Sumner, I. M. S., Milan. Mr. Lt. Col. D. G. Crawford, I. M. S., London. Dr. W. Daniels, London, Major R. Ross, Liverpool, Major W. D. Sutherland, I. M. S., Saugor, Capt. R. H. Elliot, I. M. S., Mentone.

Original Articles

M'KEOWN'S METHOD OF IRRIGATION IN CATARACT OPERATION

By R. H. ELLIOT, M.B., B.S. (Lond.),

F.R.C.S. (ENG.)

THE object of the present paper is to invite the attention of Indian surgeons to a method which may possibly have received less attention than it deserves at their hands. The change in my own attitude towards this procedure is an additional factor in impelling me to record my experience of 800 cases of cataract operated on with the aid of M'Keown's irrigator during the eight months of 1902 when I was acting as Superintendent of the Government Ophthalmic Hospital in Madras.

Early in 1902 when at home on short leave, I went over to Belfast to see Professor M'Keown use his instrument. I went with a strong bias against it on the ground that it was a measure likely to unduly prolong the operation, and to menace the integrity of the vitreous body. M'Keown had most kindly collected a few cases for my benefit, and before his clear and convincing demonstration of the power of the even and adjustable pressure exerted by an unmineralizing and aseptic fluid, my scepticism gave place to an admiration which experience has only served to intensify. During a recent tour through nearly every country of Europe, it has been my good fortune to meet many of the greatest Ophthalmologists of the day, and to watch their methods of cataract-extraction, from each one of them I have learnt something, and from many I have learnt much, but to M'Keown of Belfast I owe the knowledge of incomparably the most valuable manœuvre I have anywhere seen used in the operation for cataract.

Again and again my own old objections to irrigation have been thrown up against my advocacy of the method, and I may therefore be permitted to so far anticipate as to state that in practice they have proved groundless fears. It may encourage others to give the method a trial, if I mention that several of the most famous surgeons in Europe are already doing so. Professor M'Keown with unvarying kindness personally superintended the 'finish' of each set of instruments before they were despatched, and will always be glad to do the same for any surgeon who requires an irrigator in order to give the method a trial. His address is Professor A. M'Keown, M.D., M.Ch., 20, College Square, East, Belfast, Ireland.

In his valuable monograph entitled 'Unripe Cataract', M'Keown has dealt at length with his methods, and one can confidently recommend the work to all who are interested in the subject.

It would be a work of supererogation for me to repeat what the author has already so clearly and so interestingly set forth, and I will therefore proceed at once to describe my own application of his principles in my last 800 cases of extraction, only premising that the method has proved so valuable to me that, following his advice, I have extended its use to *all* cases of extraction as a routine measure, my reasons for so doing I will explain in due course.

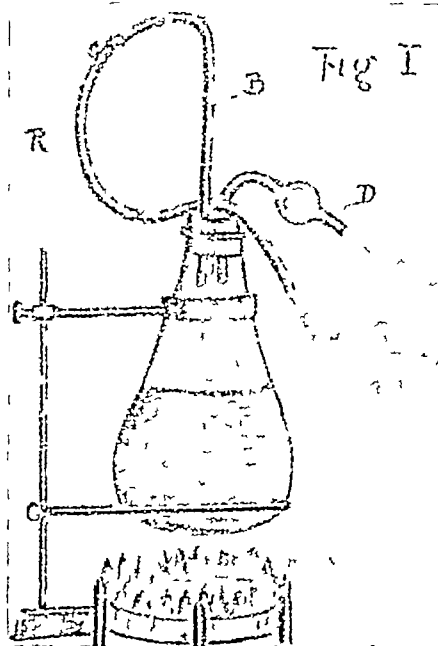
The large number of cases demanding extraction in the Madras Hospital necessitated the observance of careful routine, but at the same time every effort was made to treat the cases individually. The cataract-operation day was Saturday, and the cases admitted during the week were reserved for that day. On four occasions more than 40 extractions were made on a single morning, and on one of these occasions the figure rose to 53. Between 20 and 30 extractions was a common morning's work, and when the number fell below 20, one felt that an easy task was before one. Cases of very immature cataract were kept back for the general-operation-day (Wednesday), as the washing out of cortex in such cases often takes a long time. For my chief assistant I had the good fortune to have Assistant-Surgeon Collins, who having been posted to the hospital for many years, has assisted at the extraction of 12,000 cataracts. A special student was in charge of the irrigator, and was not allowed to do anything else for the time being.

Preparation of instruments—All instruments were boiled before and after each operation, the knife and needle were excepted, these being carefully wiped each time directly before and after use with sterile absorbent wool soaked in chinisol solution (1/3000).

Preparation of patient—The usual steps taken before an operation were observed, including the careful washing of the face and lids, the lashes of the temporal half of the upper lid were cut short, and the face around the area of operation was washed with chinisol solution, which was likewise used for the thorough irrigation of the conjunctival sac.

Preparation of Irrigator—Detach the rubber bellows from the tube D, raise the glass tube B, which dips below the surface of the liquid, as shown in Fig 1, and arrange the rubber tubing R attached to it, so that the end is not in contact with any surface, the bottle should have been filled two-thirds full with normal saline solution, and is now ready for boiling. After free ebullition, and immediately after removal of the flask from the flame, clamp the rubber tube R, and dip its free end under an antiseptic solution, till the apparatus is to be used, lower the tube B to its usual place (*vide* Fig 2), cool, an enters, but it can only do so through the tube D, the bulb of which M'Keown fills with a filtering plug of cotton-wool, for the latter I

substituted asbestos, as being more permanent. When one is about to operate, the bellows is



Sterilisation of Irrigator (M Keown)

attached at D (Fig 2), and a freshly boiled cannula is adapted to the tube R, the clamp is relaxed and the irrigator is ready for work. Unless one is using distilled water, a luxury we could not afford, it is *absolutely* necessary to have the fluid carefully filtered before it is boiled.

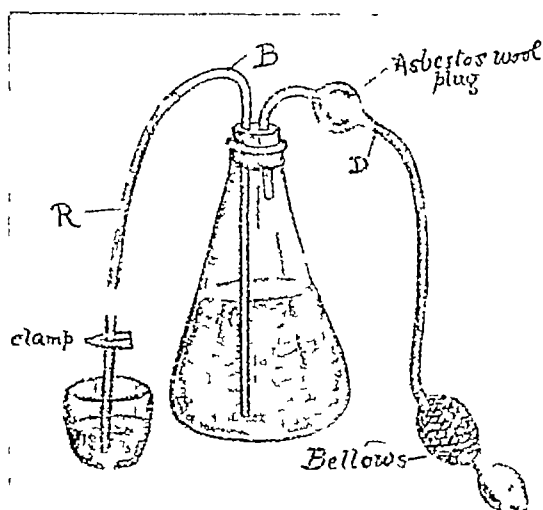


FIG 2

Steps of operation—(1) A Spring-stop-speculum is inserted, and the capsule is freely lacerated by means of a Bowman's stop-needle, care is taken to tear a free aperture in the centre of the dilated pupil. (2) The section is made in the limbus, and its size is graduated according to the expected size of the lens to be delivered. During the section my assistant raises the

speculum off the globe, holding it firmly, to prevent mishaps, should the patient squeeze the eye. (3) While the assistant still holds the speculum, a narrow iridectomy is made, and (4) the nucleus and any cortex which accompanies it, is gently delivered by pressing below with the points of the conjunctival forceps, whilst a curette serves for counterpressure above. (5) The speculum is removed, and the chamber is washed clean of blood, cortex, etc., by means of the irrigator. (6) The iris is replaced by the same means, and the eye is closed. A pad of lint, wrung out in chincol solution, closes each eye, and is kept in place by a firm bandage applied over aseptic absorbent wool. One may now be permitted to take up each of the above steps in detail.

(1) *Preliminary needling of the capsule* is a procedure which is apparently never used in Europe, and yet it has the following marked advantages—(A) The instrument used is capable of being easily rendered aseptic, as it has no corners, and one needle will last for a large number of operations, (B) the manoeuvre is a very easy one, and is performed under conditions which permit the surgeon to see exactly what he is doing, consequently, he can place his incision *where he will*, and make it *what size he will*, without any need for haste, since the eye is still intact. (C) The surgeon can confirm his diagnosis as to the kind of cataract he is dealing with, for the needle becomes in his hand a probe, and thus throws valuable light on the after stages of the operation. Into the cortico-nuclear cataract, the needle point sinks easily, the capsule of the Morgagnian variety (very common in India) usually bursts readily, giving exit to a cloud of turbid fluid which, though it may to some extent obscure the details, more than compensates for this disadvantage by very sensibly deepening the chamber, and thus enabling the operator to make his incision with a sure confidence that he will not damage the iris. In a few cases one finds the capsule of a Morgagnian cataract very tough, in such I withdraw the needle, and lacerate with the knife point during section, these cases are fortunately rare. The feel of a hard cataract is characteristic, and it will be noticed that it recedes before the needle-pressure.

(2) Of the section, one has already premised that it is to be graduated *according to the size of the solid nucleus to be delivered*. I have not infrequently met with very small nuclei, in operating on Morgagnians, and on one occasion the nuclei of two cataracts in the same subject were so small that I altogether failed to find the first, and only discovered the second by exercising great care, it was about 2 mm in diameter, and was extremely thin. On the other hand, one meets with large hard cataracts, which require very nearly $\frac{1}{2}$ the circumference of the cornea for their safe escape. Again between

these wide limits one meets with nuclei of all sizes. Now, whilst I hold strongly that too large an incision is an unnecessary mistake, I look on too small an incision as, to borrow de Weker's expression, a 'sin' against one's patient.

The incision I employ enables me to take up a conjunctival flap at will, I only do so in aged or weakly patients, the great objection urged against such a flap has been that it bleeds into the chamber and clouds the details of the operation, if an irrigator is used, such an objection has *no force*, since one can wash the chamber free of blood in less than a minute by means of the stream of fluid.

I lay great stress on the management of the speculum. My assistant seizes the hinge-end of the speculum firmly between a finger and thumb, and raises it in such a way that both blades, with the eyelids, are lifted clean off the globe, on which the speculum is at no part permitted to rest. I never found Mr Collins' fingers in my way, and it is some criterion of the skill with which he managed the speculum for me, that in a series of 500 cases I had only 10 vitreous escapes (2 per cent), and in another of 250 cases only 3 (1.2 per cent).

(3) In my last 800 or more cases I have adopted iridectomy as a routine stage of the operation. My reason for so doing has been that I have found it impossible to 'immobilise' (or, save from all muscular effort) the native patient in the two or three days following operation. It matters not whether he be educated or uneducated, rich or poor, one cannot rely on his keeping quiet, nor can one in most cases provide him with the standard of nursing requisite for safe immobilisation. Again and again of an afternoon I have found the operation cases of the morning sitting on the floor of the ward or even in the garden, and doubtless discussing the details of their operation, and the latest quotations for rice. Expostulation and entreaty are of no avail, indeed it seems quite hopeless to make them realise the cardinal importance of absolute rest after extraction. One has therefore to squarely face the facts, and to modify one's treatment accordingly. In my first 1,200 cases I made it a rule to do the simple operation whenever the indications were favourable, but I found that a series of happy results would be rudely broken by unexpected failures. It is true that most of the European surgeons who select their cases for the simple operation, confess to a very similar experience, but the conditions of Indian surgery exaggerate the evil in a way to which European practice is a stranger. To understand why this is so, one must go to the causes of prolapse of the iris. These are divisible into (1) predisposing, and (2) exciting. Under *predisposing* I would class any factor leading to an impairment of the active contractility of the iris. Such a lesion may be present and recognisable before operation, or it may be due to

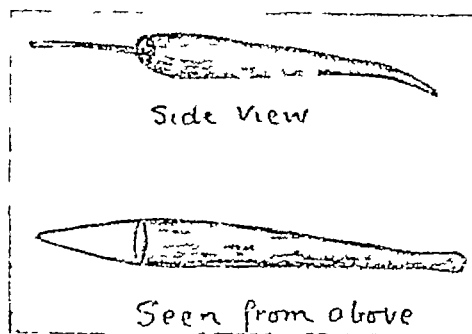
the over-stretching or tearing of that membrane during the procedure.

Under *exciting causes* come all sudden movements of the patient after operation, and all sources of straining. Such are the very conditions which good nursing controls for us, and which the Indian surgeon is so powerless to guard against.

I have elsewhere advanced an explanation of the relations of these two sets of causes, which I would ask leave to repeat here. It is accepted that an iridectomy prevents prolapse by providing a safety-slucce through which the rush of aqueous can escape when the section bursts. There is another powerful factor at work, *viz*, the "tone" of the iris. If this membrane, by virtue of an unimpaired activity, lies back in its usual position against the lens, the posterior aqueous chamber is reduced to its normal small proportions, and there is but very little fluid dammed up behind it, hence it is less likely to be carried outwards by the gush, when the chamber bursts, furthermore, its own muscular tone tends to keep it in place, and does not permit every escaping stream to carry it up like a belling sail. When, on the other hand, the iris-tone is lost, each outward rush of the fluid dammed up in unusual quantity behind the membrane acts on it at an advantage, and tends to carry it out before its flow.

It has been my good fortune to discuss the question of iridectomy in extraction with many famous ophthalmologists, and with scarcely an exception, they have recorded their opinion that they would consider iridectomy a routine step in cataract extraction, if they could not be sure of immobilising their patient after operation.

FIG. 3



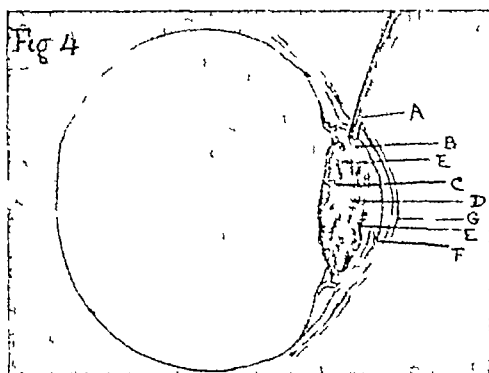
The Simple Cannula (modified)

(4) This stage consists in the gentle and careful delivery of the harder part of the cataract. Very little force is used, and frequently but little cortical matter is left behind. If the incision should be insufficient to allow the easy escape of the nucleus, I prefer to enlarge it, rather than to attempt to squeeze out the lens through too small an aperture.

(5) The upper lid is raised with the left hand and the cannula of the irrigator is held in the right. Care is taken to have the fluid

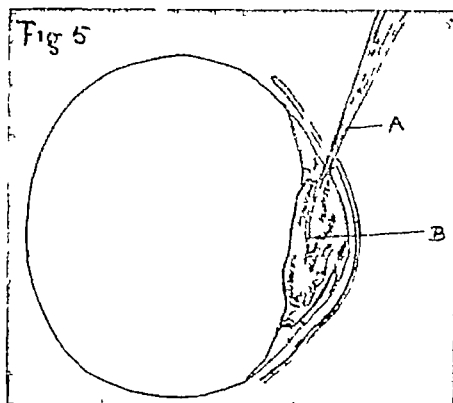
about 99° F, I differ from M'Keown in my method of approaching the eye, inasmuch as I always play the stream on the lips of the incision before introducing the cannula into the wound, this modification recommends itself to me for two reasons, *viz* (1) that it cleans the lips of the section and so lessens the danger of carrying septic matter into the eye, and (2) that it prepares the patient for what is coming and prevents him from starting when the irrigation begins

FIG 4



- A—Incision
- B—Nozzle of cannula in wound, introducing fluid from irrigating apparatus
- C—Posterior capsule of lens more or less pressed back by the fluid towards the position it had before the extraction of the body of the lens
- D—Cortical substance
- E—Capsule floating
- F—Iris represented as pressed forward by fluid towards cornea, but if fluid was so directed as to come with any force in front of the iris, it would assume a backward position
- G—Cornea is pressed forward, so as to assume its normal anterior convexity

FIG 5



- A—Nozzle of cannula antero posterior vertical section
- B—Termination of nozzle with fluid issuing from slit in the end

The cannula shown in Fig 3, differs slightly from M'Keown's, in that the stem tapers to a point instead of being square, and that the shoulder has been rounded off. These small modifications enable one to slip the rubber tube on easily and quickly, and are of importance to those who have to use the irrigator many times in a morning, as they facilitate the application

of the fresh cannula required for each new operation. Professor M'Keown has most kindly expressed his approval of these alterations.

The first point of importance is the direction we must give our stream, and with that we may consider how far into the chamber it is advisable to introduce the point of the cannula. In most cases, it is sufficient to place the point of the nozzle only just within the wound and no more, in any case I always begin thus, and only push it farther in, if necessary. It is not that one fears to push it boldly into the chamber, but that one sees no object in doing so unless there is a distinct reason for it. The direction of the stream must not be parallel to the iris, but a little backwards, so that it will pass behind the lower margin of the latter membrane, and float it up. A stream so aimed will almost certainly enter the tear in the capsule, especially if the latter has been freely made, and it will therefore wash that sac free of its contents. It is quite erroneous to suppose that this manoeuvre is only possible after iridectomy, though it is doubtless much easier to clear the capsule after removing a portion of the iris. I have tried all M'Keown's cannulas, but have settled down to work almost exclusively with the one here figured, which is the simplest of the set. Of the others, I shall speak later. Fig 4 (after M'Keown) shows excellently the position of the parts during the cautious use of the simple nozzle, while Fig 5 shows the point of the cannula boldly passed into the capsule for more thorough washing out. It is not equally easy to irrigate out all kinds of cortex, but the physical characteristics of the portions removed with the nucleus will always give us a good idea of the task which lies before us. It only requires a very few moments' work with the stream to confirm or refute the opinion previously formed. In order to supply a few broad rules, which may be of use to beginners of the method, I have ventured to suggest a classification of cortex, which is only intended to refer to its physical properties as found at the operation. It is therefore purely empirical, and of no wider significance than here indicated.

It classifies cortical matter into (1) the flocculent, (2) the brittle, (3) the doughy, and (4) the sticky.

(1) *The flocculent variety* is met with most typically in cortical or cortico nuclear cataracts in which the nucleus is comparatively small. In either case it is only found when maturity is approaching, and it is the easiest form of all to wash out. All that is necessary is to insert the point of the cannula just within the wound margins, and to throw in a gentle stream. The opaque lens matter gathers like a cloud in the pupillary area, and then pours out of the chamber, not seldom escaping with a sudden rush. Less than a minute suffices to leave a clear black pupil, and we may rest assured that we have

left nothing behind to cause trouble during convalescence

(2) *Brittle cortex* is seen in the case of shrunken nuclear cataracts in advanced life. When the nucleus escapes, we notice that its sharp thin edge has at parts been broken off and left behind. Such fractures most commonly occur at the sides of the lens, and are due to stripping off of the edges of the lens at the angles of the wound. It may not be strictly correct to speak of these masses as cortical, but with the reservations above laid down, there should not be any confusion. It is very easy to remove them as a rule, and it is seldom necessary to enter the chamber far for them. On the other hand, they swell up and give rise to much trouble if left behind, and they are far from easy to remove by manipulation, if a curette is used to dislodge them, it will often be found that they are tightly wedged into the angle, and that they are both troublesome and dangerous to extract.

(3) *Doughy cortex* is met with in the dry cortico-nuclear cataracts of later life and is at once the most difficult to remove and the most dangerous to leave of all varieties of lens-débris. The nucleus is usually large, and the whole lens is bulky, while the cortex has a doughy and very characteristic consistency. Often large casts will strip off the cataract during delivery, and will take refuge under the iris where their presence is hardly suspected till one has floated up that membrane, then these bulky white masses can be seen without difficulty, and it is in cases of this kind that one has most often to plunge the nozzle boldly into the capsule. Patience is often required. If irrigation with a gentle stream does not suffice, bolder measures may be used. It will be a revelation to most operators to find how powerful a jet may be used in the anterior chamber, without any fear of ill consequences. Should the mass be obviously impacted in one of the margins of the incision, one can often detach it by playing the stream on it from one side or another. Try the effect of a jet from the opposite angle, failing that, shift the nozzle gently over into the angle in which the impaction has taken place, and try to drive the mass back into the chamber, sometimes a stream shot right down the vertical axis of the chamber will work wonders, by breaking up below into two diverging ascending streams.

(4) *Sticky cortex* is met with in its most characteristic form in the clear peripheral layers of a lens removed for high myopia. We also meet with it in the cortex of very immature cortical cataract, and in the peripheral layers of some typical nuclear cataracts in subject *not* advanced in life. There is no form of lens-débris, which is so hopeless to attack by the ordinary methods, or so resistant to the influence of massage as this. Cases of this kind were

always reserved by me for an occasion other than the cataract-operation-day, on account of the time and trouble they require expended on them. Nevertheless, if neither time nor trouble be

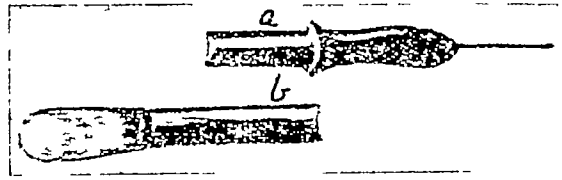


Fig 6

The two parts of the cannula for intra-capsular irrigation
a fits into b

(After M'Keown.)

stinted, they yield admirable results. It is in dealing with this class of cases that one finds intra-capsular injection, as described by M'Keown, most useful. Fig 6 shows the needle-cannula used*. In dealing with nuclear cataracts in old people one may find that the needle-point will not readily enter the lens-cortex, M'Keown has pointed out that this is a sure indication that the lens is hard throughout and will readily separate in its entirety from the capsule. I have had many opportunities of proving the value and accuracy of this simple but important observation. If, on the other hand, the cortex will admit the needle-point, it is well to take plenty of time, and rather to make several small injections at 5-minute intervals, than to tear the cortex too widely at first.

The object before one is to distribute the fluid along the most superficial layer of cortex, and thus to prepare that layer for easy separation from the capsule. This will best be effected by limiting the extent of the tear in that membrane at first. It is a satisfactory and interesting sight to watch the clear lens substance swell up and become opaque under the disintegrating action of the fluid injected. When this change has occurred over the whole front of the lens (and, it may be presumed, over much of the back as well), the nucleus and a quantity of lens-débris are gently removed in the usual way. Then the irrigation of the sac is carefully conducted by means of the simple cannula (Fig 3), and is repeated several times at 5-minute intervals. Patience and perseverance are essentials for success. Without these, it would be better not to attempt the operation.

It is not pretended that the empirical classification just offered is exhaustive of the varieties of cortex encountered, there are of course many intermediate forms.

The reposition of the iris can be affected more safely, and at the same time more completely, by means of the irrigator than in any other way I know of. For this purpose the jet of fluid must be a gentle one, and must be

* Of M'Keown's Scoop irrigating nozzle I have little to say. I consider it greatly inferior to the other two cannulas, though it may be useful at times.

directed along the surface of the iris and *parallel thereto*. If the escape of the lens has wedged the iris edges into the angles of the incision, the point of the cannula is gently entered at the same angle, in order to open it up, whilst the stream plays over the surface of the membrane. If need be, I do not hesitate to use a strong stream in order to deliver impacted edges, but it is essential to return to the gentle jet again, as soon as our purpose has been accomplished, so as to lay the iris out evenly in its fully replaced position. It is a most attractive sight to see the impacted membrane unfolding before one's eyes, for all the world like the falling of a theatre curtain. In my first 1,200 cases, when I was working by the ordinary methods, I not infrequently met with difficulty, and even with failure, in my attempts to ensure the thorough replacement of the iris. Thinking that my own methods or skill might be at fault, I seized every opportunity of closely watching the experience in this respect of the many masters of our art, whose operations I have been privileged to witness in different countries. I find that the very difficulties and failures we are discussing were repeated in their practice, and this has emboldened me to emphasise my point in a way I would not otherwise have ventured to do. Indeed, it is in many cases no easy task to fully repose an iris after cataract extraction with the aid of the instruments ordinarily used, and this, even should the operator be very expert.

If, however, one combines the even pressure of a stream of fluid with the dilating force of a rigid instrument, the difficulty quickly disappears. Not is this all, for the gentle stream, used at the close of the operation, carries back into the chamber tags of capsule, which otherwise, by becoming impacted in the wound, might give rise to secondary glaucoma. As my original papers with full statistics have appeared in the *Lancet*, I refrain from repeating them here, but two facts may be shortly stated, as they bear on the above important points—

(A) In my last 250 cases of irrigation, in which I paid very particular attention to the thorough replacement of the iris, I only had to resort to the removal of impacted portions of that membrane twice (*ie*, in 0.8%), in a further four cases (*ie*, 1.6%), small tags of iris were impacted, but the condition gave rise to no serious symptoms, and did not demand operation.

(B) In my first 1,200 cases, before I used the irrigator, I met with three cases of secondary glaucoma, attended with most unsatisfactory results, whereas in the 800 cases operated on by M'Keown's method, there was one doubtful case which had a very happy ending. I attribute the difference to the complete replacement of capsule-tags by the stream.

This paper is already so long that I refrain from dilating on the value of irrigation in the treatment of traumatic cataract, or on its wide

application to all operations, in which a clear field during the procedure, and a thoroughly replaced iris afterwards, are called for, but, in conclusion, I will ask permission to shortly state some of the principal advantages of Professor M'Keown's methods. Before so doing, I would remind my readers that, after a full trial of irrigation, M'Keown first brought the matter to the notice of the medical profession as long ago as 1884. He has since elaborated and improved his technique.

(I) So long as the most ordinary precautions are taken, one may repose absolute confidence in the only instrument one inserts into the eye and which is sterilised normal salt solution.

(II) Even when one boldly enters the chamber with the cannula, the aseptic fluid which washes the wound edges beforehand, and which freely flows out of the chamber during irrigation, may be relied on to wash out any doubtful particles the nozzle may possibly have carried in.

(III) The chamber being full of fluid, a sudden movement on the patient's part does not involve the grave danger to the vitreous, which is inseparable from the presence within the eye of an instrument used under the ordinary conditions of practice, in the latter case, since the chamber is empty, the instrument lies in actual contact with the hyaloid membrane.

(IV) The fluid enables us in perfect safety to reduce the adhesiveness of the cortex to the capsule,* to search *every part* of the chamber, and† to break up and easily expel recalcitrant masses, it thus places in our hands an instrument which, to my mind, has no equal for clearing the eye of cortical matter.

(V) The probability of secondary cataract, due to lens-débris left behind at the extraction, is reduced to a minimum. DeWecker has very forcibly drawn attention to the rôle such unremoved débris play in determining prolapse, it may have been observed that whilst discussing the ætiology of prolapse I did not allude to this factor. The omission was due to no want of respect for the great teacher's view, but solely to the fact that since I have employed irrigation, I hardly know what it is to leave cortex behind, a very different experience from that of my first 1,200 cases operated on without its aid. I now find that on the third day, a large proportion of the pupils are as clear and black as if the cataract had been Morgagnian.

(VI) It is never necessary to work in a chamber whose details are obscured by blood or débris, since a very few moments irrigation serves to clear away all such obstacles to clear vision.

* An analysis of a series of 500 cases appeared in the *Lancet*, 8th November, 1902.

† Further series will appear in due course.

THE PATHOLOGY, PREVENTION AND TREATMENT OF MALIGNANT DISEASE

BY E R ROST CAPT, I M S, Rangoon

TABLE II

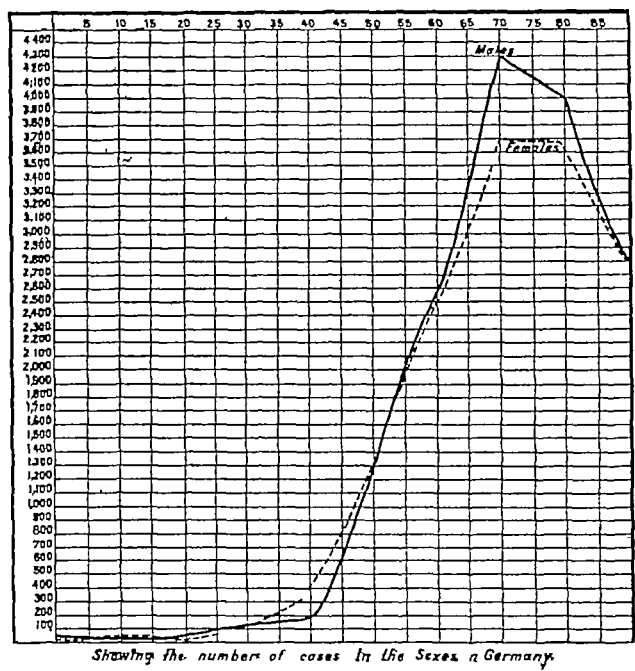
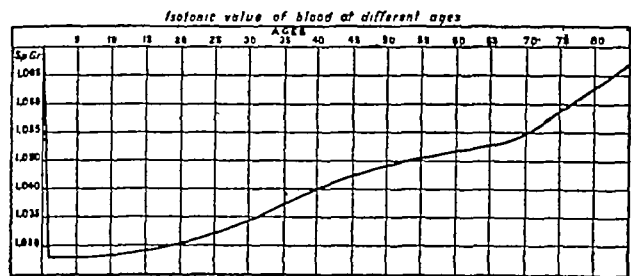


TABLE IV



(VII) When one meets with a rigid or flaccid eye, the cornea of which falls back on the hyaloid, one can at once refill the chamber with fluid, troublesome air-bubbles are expelled without delay, the field of operation is cleared, and room is afforded for necessary manipulations. Thus a difficult class of cases is transformed into an easy one.

(VIII) And lastly the operation closes on a full chamber, and thus one can be sure that the flap has been left in good position.

My one fear in offering this paper* to Indian surgeons has been that I may have failed to have done justice to the method I am advocating. I am conscious of shortcomings, but I sincerely hope my deficiencies will not prevent a body of surgeons, who have ever been ready to take a method on its merits, from doing so with this

THE PATHOLOGY, PREVENTION AND TREATMENT OF MALIGNANT DISEASE†

By E R ROST,
CAPT, I.M.S.,
Rangoon

I AM ANXIOUS to bring to your notice a certain view regarding the pathology of malignant growths, from which a method of treatment has been devised and, as far as it has gone, has given encouraging results.

I have been working at the pathology of malignant growths (and by this term I include carcinomata and sarcoma, then pathological nature being analogous) since July 1901 and have experimented with forty tumours, ten being in the living subject with a view to treatment.

I came to the conclusion that the blastomycetic origin of malignant growths was the line of investigation to adopt, from the constancy with which these organisms were obtained from tumours, where contamination was unlikely.

I found, moreover, that these organisms grew best in cane-sugar, and it struck me that glucose might have something to do with the causation of malignant growths.

Later on, it was, while trying certain sedimentation reactions, that I found that normal saline solution agglutinated a species of blastomycete, one of the saccharomycetes, which was obtained out of tumours both carcinomata and sarcomata, of great variance in structure and position.

This led me to believe in a controversy between glucose and chlorine with regard to this organism, and I began to look to statistical data, chemical-physiological data, chemical-pathologi-

cal data, experimental data and clinical data, and will now attempt to show how these data agree with this idea of the nature of malignant growths.

And it will be seen that malignant disease is due to a saccharomycete which grows in the body favoured by glucose, such growth being admissible only when the amount of chlorine in the body, falls below normal.

I STATISTICAL DATA

These have been taken principally from the reports of the German Cancer Committee, which are the most complete yet to be had, and the accompanying table has been compiled from these reports and from the census returns of the country —

TABLE I

Work	Cases in country	Cases in large towns	Total cases	Population	One case population
Hunters	35		35	6,249	150
Without work	2,843	828	3,671	2,142,808	600
Washers	109	40	139	128,992	900
Panthers	17	5	22	29,351	1,300
Printers, etc.	694	260	954	1,541,302	1,700
Servants	163	56	219	449,256	2,200
Miners	121	3	124	740,000	2,000
Wood	221	60	281	717,012	2,590
Cleaners	482	131	623	1,616,320	2,600
Post & Railway	380	77	457	1,347,763	300
Pensioners	596	186	782	2,389,525	
Clergy	55	8	63	173,452	2,900
Paper	30	15	45	189,891	3,100
Lead	47	3	50	176,224	3,520
Engravers	2	1	3	11,514	3,830
Fishers	20		20	80,098	4,000
Gardeners	50	0	59	248,277	4,200
Slaughterers	83	18	101	424,245	4,240
Hair dressers	18	7	25	124,956	4,600
Sweeps		5	5	24,375	4,870
Textile	170	20	196	1,017,112	5,000
Tobacco	49	12	61	273,692	4,580
Foistlers	63		63	352,566	5,600
Carpenters	91	9	100	553,117	5,830
Bricklayers	187	29	216	1,321,188	6,000
Brewers and malters	32	6	38	246,730	6,500
Chemical	19	2	21	201,772	7,000
Metals	356	87	443	3,193,916	7,210
Bakers	67	9	76	552,626	7,270
Farmers	2,136	31	2,167	17,515,187	8,200
Seamen	19	10	29	203,004	9,000
Doctors	20	6	26	2,659,4	9,000
Stones & earth	84	8	92	1,278,094	12,700
Distillers	6	1	7	273,692	3,900
Salt Miners	1		1	37,781	37,781
Colour factories	1	1	2	55,218	28,000

Showing workers affected in Germany

TABLE III

RANGOON

CLASS	Population, 1901	Cases of malignant disease	One case in
Mahomedans	43,012	11	3,910
Hindus	82,994	34	2,441
Buddhists	83,631	63	1,253
Christians and others	17,789	29	613

Cases treated at General Hospital for 3½ years

* By special request of Professor Landolt, and with the permission of the Editor of the *Indian Medical Gazette*, a copy of this paper (slightly modified) has been sent to *Les Archives d'Ophthalmologie*, in which it will appear in French.

† Read before the Burma Branch of the British Medical Association.

MADRAS

CLASS	No of cases
Hindus	4,903
Eurasians	1,553
Mahomedans	339
Europeans	335

It shows the percentage of the disease in the different workers. Amongst the salt miners there was only one case, and this was in a woman in a population of 37,781 salt miners.

In seamen there were only 19 cases, 10 of which were in men living in the great towns, or one case in 9,000.

While in hunters the disease appeared 1 in 150, in those without work 1 in 600 (probably on account of age), in washers 1 in 900, in cleaners, 1 in 2,600, in painters 1 in 1,300, in paper workers 1 in 3,100, in wood workers 1 in 2,590.

Table II shows the prevalence of the disease at different ages in the two sexes, and this will be referred to under chemical-physiological data.

The third table shows the prevalence of the disease in two large towns in the East, namely, in Rangoon and in Madras, showing that Hindus are by far more frequently affected than any other class of native, and we know the Hindu to be a great sugar eater.

Fourthly, the statistics at home and of the German Cancer Committee have undoubtedly shown that the disease is on the increase and that it is of the nature of a contagion.

Lastly, the consumption of sugar is greatly on the increase and the consumption of salt on the decrease.

The manufacture of sweets and sweet articles of food has increased enormously all over the world, but specially in the large towns of Europe, where we have noticed confectioners, shops like the A, B, C, etc., cropping up everywhere, the ordinary restaurants suffering.

Sweets, cakes, sweetened bread, biscuits, jams, syrups, preserved fruits, chocolates and sweetened drinks are far more partaken of by the general population than formerly.

Sugar has been "boomed" in trade, and the transactions in it are enormous.

On the other hand, salt-meats and salt-fish have been replaced by other methods of treatment, such as preservation in vacuum tins, and the trade in tinned unsalted provisions, such as meats, tongues, sausages, salmon, etc., has also become enormous of late years, so much so that the amount of salt consumed by the general population has greatly fallen, our cooks use less salt than they used to, on account of the invention of various other flavouring agents.

II CHEMICAL-PHYSIOLOGICAL DATA

Firstly with regard to the amount of chlorine in the body there is more in males than in females.

The density of the blood is in opposite relation to the amount of chlorine in it, and the density of the blood increases with age, rapidly up to the climacteric in women and not so rapidly in men.

Table IV shows the increase of the density of the blood, and this is practically in opposite relation to the amount of chlorine in the blood.

Moreover, the amount of chlorine in the blood of a man at 25 is 468%, while at 35 it is 456%, in females at 25 it is 441% (Biernacki).

Compare this table with the one showing the prevalence of the disease at different ages in the sexes, and we see a distinct relation.

Again, in situations where malignant growths are rare, such as in the calf muscles, brain and lungs, there is a large amount of chlorine in the cells (see Haliburton's Chemical Physiology).

But unfortunately the amount of chlorine in the various parts of the body has not been thoroughly investigated.

But we know the chlorine in the breast to be very small in amount while lactose is turned out into the milk.

III CHEMICAL-PATHOLOGICAL DATA

The examination of the blood of carcinomata has been carried out by a number of observers (see Von Limbeck's Pathology of the Blood). Sugar has been found to be increased in the blood in cancer, and the diastatic power of the blood is increased in cancer.

The chlorine in the blood in cancer has been found to vary very much and is much below normal in most cases, there is a retention of chlorine in the blood in a few cases, however, probably due to the anæmia caused by the malignant growth.

I tried some experiments to ascertain the amount of chlorine in tumours and surrounding tissues and found it to be very small in amount, far below the average chlorine in the tissues.

IV EXPERIMENTAL DATA

These have been directed at —

(i) The cultivation of a species of saccharomycete from malignant growths and the demonstration of a species of saccharomycete in malignant growths.

(ii) The effects of injection into animals of cultures of this saccharomycete.

(iii) The influence of a diabetic diet and salt on these effects.

(1) I devised an intra-capillary pipette, in which one can place one's sterilized culture medium and inoculate it directly from the blood of the tumour, by running the broken end of

the pipette into the tumour. The medium I used was sterile cane-sugar, which with blood forms a most excellent culture medium for this species of saccharomycete.

I have done this in many cases and have a number of stained specimens of these saccharomycetes, taken from a variety of tumours.

In some instances other organisms grew out, but these would in a few days become supplanted by the overgrowing saccharomycetes, and be crowded out. I was then struck with the idea of preserving portions of tumours in sterile cane-sugar and found that one could prepare a kind of tumour jam, in which at first contamination might occur, but the supremacy of the saccharomycetes in the medium would overrule.

I have some such jams which have been kept for months, and sections of the tumours show

the tumour cells as usual, but the saccharomycetes abounding in and between them.

As to the demonstration of saccharomycetes in malignant growths, the *Practitioner* has been publishing articles by Mr. Foulerton of the Middlesex Hospital so far back as 1900 he published experiments on the pathogenic action of blastomycetes in animals (*Journal of Pathology and Bacteriology*, Volume VI, page 37, 1900), and this work has been continued in well-equipped laboratories in America.

It was while testing sedimentation reactions to this saccharomycete with cancer blood that I found that normal saline solution sedimented the saccharomycete.

I then carried out experiments to see how much sodium chloride was required to kill off cultures of saccharomycetes derived from

TABLE SHOWING RESULTS OF INJECTION OF ANIMALS

Number	Animal	Site of injection	Material of Injection	Symptoms.	Duration	Results
1	Guinea pig	Peritoneum	16-day culture of cancer of testis	Rapidly fell in weight	Died in 8 days	Saccharomycete in liver
2	Guinea-pig	"	Liver of No 1	"Absconded" Developed tumour in right hypochondrium		
3	Guinea pig	"	3 day pipette culture of cancer glands.	Fell in weight from 19½ oz to 12½ oz	Died in 60 days	Nodules in liver
4	Guinea pig	"	3-day culture from sarcoma foot.	Fell in weight from 25 oz to 15½ oz	" " 39 "	" "
	Guinea pig	Peritoneum and hind leg	11 day culture from sarcoma arm	Fell in weight from 21 oz to 16 oz.	" " 28 "	" "
6	Guinea pig	Peritoneum and hind leg	" "	Fell in weight from 23 oz. to 21 oz	" " 46 "	" "
7	Rabbit	Peritoneum	7-day culture from sarcoma foot	Fell in weight from 45½ oz to 20 oz	" " 43 "	" "
8	Rabbit	"	11 day honey culture from sarcoma arm	Fell in weight from 41 oz to 23 oz	" " 28 "	" "
9	Monkey	Breast	3-day culture of sarcoma foot.	Developed a hard nodule, which vanished in three weeks	"	Quite well.
10	Mule	Right shoulder	4-day culture of ovarian cancer and	Nil		" "
		Left shoulder	29-day sarcoma arm	Nil		
11	Dog	Peritoneum	5-day lymphadenoma.	Fell in weight from 17 lb to 12½ lb	Died in 25 days	Nodules in liver, & portal glands
12	Cat	"	31 day carcinoma of leg	Fell in weight from 3 lb 9 oz to 2 lb	" " 36 "	Nodules in liver
13	Cat	"	33-day carcinoma of leg	Fell in weight from 36 oz. to 23½ oz	" " 96 "	" "
14	Dog	"	10-day epithelioma of penis.	Fell in weight from 12 lb 10 oz. to 8 lb 6 oz	" " 96 "	" "
15	Dog	"	Cancer of breast	Fell in weight from 16 lb 8 oz. to 13 lb 2 oz	" " 100 "	Growth on stomach
16	Cat	"	Carcinoma of kidney	"Absconded"		
17	Cat	"	" "	Went up in weight from 3 lb 14 oz. to 5 lb 2 oz.		Quite well
18	Cat	Diabetic diet and salt Peritoneum	A culture	Fell in weight from 3 lb 6 oz to 2 lb	" " 27 "	Nodules in liver, enlarged abdominal glands
19	Cat	Carbo-hydrate diet Peritoneum	"	Went up in weight from 4 lb 5 oz. to 6 lb 1 oz.		Quite well
20	Cat	Diabetic diet and salt. Peritoneum	"	Fell in weight from 2 lb 4 oz. to 1 lb 10 oz.	Died in 21 days	Nodules in lungs.
21	Cat	Hind quarters Carbo hydrate diet.	" "	Fell in weight from 2 lb 4 oz. to 2 lb	" " 18 "	Nodules in liver
22	Cat	Peritoneum	" "			
23	Cat	Diabetic diet and salt Peritoneum	" "		Died same day from congestion of all internal organs	
		Diabetic diet and salt.	" "		Died from pneumonia on 13th day	

malignant growths and found that this varied very much in some case the amount of sodium chloride required was only one per cent in a few hours, in other cases several days were required, but the growth was always inhibited.

Chlorine gas passed through these cultures rapidly killed the organisms, and it is evidently the chlorine that is the active agent.

The saccharomycetes grew best in blood glucose, also in chicken-broth glucose, or in beef-broth glucose without salt, or on glucose agar. But the growth on agar usually failed, and the growth was extremely slow.

These saccharomycetes appear as oval bodies with round bodies within, which are highly refractile and always towards one pole of the oval. These bodies not only vary greatly in size, but also in length. The inner bodies also vary in size and refraction, so that seemingly a great variety of saccharomycetes may appear in the culture. These saccharomycetes grow very slowly and alter in appearance from time to time. Thus out of a large number of tumours of great variance in nature and position, I obtained in every case a species of saccharomycete, sometimes appearing as different species, but always the same characteristics, and moreover the alterations of growth of the subsequent cultivations show that the organism is one of variance.

(11) Experimental injection of cultures of this saccharomycete was carried out in twenty-four animals, and the table on the preceding page shows from what these animals were injected, then fall in weight, duration of disease and result.

One guinea-pig and one cat absconded, and in the mule and monkey no sign of disease is yet in evidence.

The first guinea-pig injected intra-peritoneally with a 16-day culture from a cancer of the testis, died in eight days. It fell in weight from $19\frac{1}{2}$ ounces to $12\frac{1}{2}$ ounces, the peritoneum was unaffected, but the liver was saturated in saccharomycetes, some of which were seen inside the liver cells.

The third guinea-pig was injected intra-peritoneally with a 3-day pipette culture from an epithelioma of the inguinal glands and fell in weight from 25 ounces to $15\frac{1}{2}$ ounces, and died in 60 days. The liver presented a very peculiar appearance, being studded with irregular yellowish nodules throughout its substance, the peritoneum and other organs were healthy. A similar appearance was to be seen in the following cases, and was more obvious in the rabbits, dogs, and cats, where the nodules in the liver, as shown in the microscopic sections, are of a carcinomatous nature.

In some of these animals there were enlarged abdominal glands, and in the lung case an enlarged thoracic gland as well as enlarged axillary glands.

One of these sections shows the infiltration of the liver substance by columns of cells and

nodules well, the latter tend to break down in the centre like tubercles.

All these animals were well looked after and fed well, but in each case the fall in weight was very marked.

One cat was injected in the hind quarters and died in 18 days, it had nodules in the liver, but no local reaction.

One cat was injected intra-peritoneally and died in 21 days with consolidated patches in the lungs, which the microscopic sections show to be of the nature of carcinoma.

(111) Lastly, to try the effect of difference of diet, four cats were fed on a diabetic diet with salt and three cats on a carbohydrate diet without salt.

Of the four cats fed on a diabetic diet and salt, two have increased in weight and are quite well, while one died immediately after injection and another on the 13th day from pneumonia, while the three cats fed on carbohydrate diet without salt, lost in weight rapidly, and two died with nodules in the liver, and one died with a growth of the lungs. One cat of each of these series was injected with a culture from a carcinoma of the kidney and one from each of these series from a culture from a scirrhous of the breast, and the others from a culture from a pyloric carcinoma.

These experiments are being extended.

V CLINICAL DATA

The clinical data have been far more convincing, and the proof of the pudding is in the eating, as one case of epithelioma of the penis—a typical case—has been completely cured by this method of treatment.

Firstly, before I had arrived at the chlorine theory, I tried injecting a secondary epithelioma of the inguinal glands, an inoperable case, with glucose. The tumour increased alarmingly in size, there was a reactionary temperature, and the patient became rapidly worse.

Secondly, ten cases have been treated according to the theory, the first case was one of secondary epithelioma of the inguinal glands in a patient who had total extirpation of the penis for epithelioma.

This man had been in hospital for ten months and was extremely emaciated, he had chronic cystitis and kidney disease. Notwithstanding this he improved under the treatment to a certain extent, the fungating mass in the groin came away, and other enlarged glands became smaller.

The glands on the right side completely disappeared. The treatment was only commenced three weeks before his death, which was hastened by an attack of diarrhoea. The peculiarity in this case was that the amount of chlorine excreted in the urine was not in relation to the amount of water as is always normally the case, and this is probably a valuable indication of

kidney disease *Post-mortem*, the kidneys were found to be affected by chronic interstitial nephritis

The second case on which this treatment was tried only lived a fortnight, he had a hopeless condition of the cheek, tongue and lower jaw, the whole mass degenerated and sloughed away, but the man was too weak to stand it

The next three cases, one an epithelioma of the œsophagus, a scirrhous of the breast and an epithelioma of the cheek, improved under treatment, but absconded

One case, an epithelioma of the penis, has been completely cured by this method of treatment, and I was hoping to show you this case to-night, but the man has unfortunately run off, and I must ask you to take my word for it

He had a large epithelioma under a phimosi of fifteen months' duration, which gradually increased in size and lately more rapidly

On admission I slit up the prepuce, but did not touch the growth, merely taking a small piece for microscopic section from the prepuce. His weight on admission was 116lbs., and this increased to 122lbs under treatment. He was under the treatment for one month and seven days, and the growth vanished very quickly and healed up, leaving an apparently normal penis

The corpus spongiosum and corpora cavernosa were very hard on admission, these soon became soft

The other two cases I have now under treatment, one—a large epithelioma of the scalp—has been under treatment for eight weeks, he has increased in weight, the secondary glands on both sides of the neck have gone down and are certainly much smaller, the growth is gradually vanishing partly by atrophy and partly by supuration [The course of this case will be hereafter reported]

The other case is an epithelioma of the hip, this has not been long under treatment, but the growth is degenerating and beginning to come away

By this treatment not only does the new growth appear to atrophy, degenerate, break down or ulcerate, but the secondary deposits seem to disappear, the general health improves, the weight goes up and the pain ceases

The treatment consists, firstly, of a strict diabetic diet, and, secondly, of piling in sodium chloride into the body preventing its excretion as much as possible. I have been giving $\frac{1}{1000}$ part of the body weight daily by the mouth or rectum, and having sodium chloride ointment rubbed into the body. The action of the kidneys should be lessened, by restriction of fluid and by giving opium and perspiration kept under control as much as possible. If there is a fungating mass, this has been dressed with sodium chloride or with sodium hypochloride, which is the more unstable salt

A still more unstable salt is the electrolysed magnesium chloride, but I have not tried this yet

One can now understand why X-rays should increase this action of the chlorine, by making the salt more unstable. I hope to try this before long

The treatment must be naturally a slow one and perhaps a little diastolic, hence the difficulty I have had in treating cases

There are many questions as to the pathology of malignant growths which this theory explains, such as, the reasons why certain organs are affected more often than others, the types of tumours, their malignancy, etc., which may be accounted for by the variance of the saccharomycetes themselves on the one hand, and the amount of chlorine present in the tissues and sugar in the blood on the other, accounting for the variance of tumours in the same tissue

Since reading this paper, further observations have been noted, which will be shortly communicated

TUBERCLE OF LUNGS IN BENGAL JAILS

BY JOHN MULVANY,

CAPTAIN, I M S.,

Superintendent, Presidency Jail, Calcutta

I Is tuberculous disease of the lungs more prevalent in Indian jails than amongst the general population?

II Does the disease progress more rapidly in jails than outside?

III Has the disease become more prevalent in jails in recent years?

The solutions of the problems set forth above appear at first sight to be unattended with difficulty. A cursory investigation soon reveals the numberless pitfalls which await the enquirer. I have, therefore, considerable diffidence in submitting this short paper as an attempt to throw some light on a very important subject

For the sake of convenience, I have confined myself mostly to Bengal jails in general and the Presidency jail in particular

Arguing *a priori*, the question, whether phthisis is more prevalent in jails than amongst the general population, should receive a negative reply. From the moment of his admission to the time of his discharge, the convict is under watchful supervision, his labour is adapted to his physical and mental capabilities, his food is selected and wholesome, his clothing is ample and he is well housed

It is true that the accommodation allowed by regulation leaves much to be desired (being less by 24 superficial and 270 cubic feet than that allowed for native troops—a fact that cannot be overlooked), but there can be no question

that the average convict is incomparably better off in jail than in his own house

At the outset we are met with what looks like an insurmountable obstacle Jail statistics stand alone There is nothing with which we can compare them with any hope of getting useful results The army consists of a body of selected men under special conditions in the general population the factors of age, sex, birth-rate, infant mortality and the incidence of zymotic disease introduce complications which preclude any possibility of obtaining a practical basis for comparison

If, however, this objection were non-existent, the reliability of general statistics is, I think, open to question

In India, more especially in the rural districts, the vast majority of deaths is returned by the village *chowkidar*, whose medical knowledge is for the most part limited to diarrhoea and fever

By the kindness of Captain Leonard Rogers, I M S, I have been able to examine the records of 966 consecutive *post-mortems* made between August 1896 and June 1898 at the Medical College Hospital, Calcutta, from these I find that in 13.4 per cent death was due directly or indirectly to tubercle of the lung, and further that 3.6 per cent. were due to other forms of tubercle These results were obtained in an institution where the admission of phthisis is discouraged Captain Rogers also informs me that a large proportion of deaths from tubercular disease and about 10 per cent of general cases, show signs of old tubercular disease of the lungs

Turning to the Calcutta statistics, I find in the three years ending 1901 (the only figures at my disposal) that the percentage mortality of phthisis to the general mortality averaged 3.98 showing a difference in favour of *post-mortem* classification of 9.16 per cent and an excess of 1.5 per cent in favour of Indian jails, and 0.32 per cent in favour of Bengal jails, taking the figures quoted by Captain Waters in the November number (1902) of the *Indian Medical Gazette*

As an ordinary rule the comparison of percentage of deaths to general mortality is most misleading and should be avoided Thus in 1875 there were 64 deaths from phthisis out of a general mortality of 986, or a percentage of 6.5, while in 1895 there were 38 out of 418, or a percentage of 9—an apparent increase of 2.5 per cent Actually the ratios per mille of average population were 3.2 and 2.3 respectively, a real diminution of 0.9 per mille I have, therefore, except in the above case, converted all my statistics into ratios per mille of average population

Here is a comparison between the death-rates of Calcutta and the Presidency Jail

Mortalities of Calcutta and the Presidency Jail contrasted

RATIO PER MILLE OF AVERAGE POPULATION

	TUBERCLE		DEATHS FROM ALL CAUSES	
	Calcutta	Presdy Jail	Calcutta	Presdy Jail
1899	2.26	10.71*	37.8	23.8
1900	1.9	4.7	53.8	21.7
1901	1.25	3.02	38.2	17.39

Judging from statistics it would appear to be safer to live in the Presidency Jail than in Calcutta

From what I have said above, I think it is evident that we in India have no statistics for comparison from which we can attain to results of any practical utility, and therefore at present we can give no definite reply to the first question, *ie*, is phthisis more prevalent in jails than amongst the outside population? If we may accept Captain Rogers' *post-mortems* as an index of the true mortality, it is not But further investigations are necessary

Turning to the question of the acuteness of disease in jails, it is essential to discover what proportion of cases is infected before admission. In the Presidency Jail during the seven years ending 1901, there were 136 admissions to hospital for phthisis and 36 deaths Of these deaths no fewer than 27 had been in jail less than three years, and of the 27, twelve had been in under six months, five under one year, and four under two years Only two had been in over eight years

Below I append a table showing average population according to period of incarceration together with the mortality liability for each year

	Average population per cent. convicts only	Phthisis mortality for each period	Mortality liability by period of incarceration
Under 6 months	18.7	12	1.70
6 months to 1 year	13.6	5	1.01
Over 1 and under 2 years	22.8	5	.60
" 2 " 3 "	22.6	5	.44
" 3 " 4 "		3	.44
" 4 " 5 "		3	.44
" 5 " 6 "		1	.06
" 6 " 7 "	18.1	1	.06
" 7 " 8 "		1	.06
" 8 " 9 "		1	.06
" 9 " 10 "		1	.06
Over 10 years	4.3	1	.63

The figures are instructive, 48.9 per cent. or practically one-half the mortality occurred during the first year of incarceration, and the liability to death from phthisis diminishes year by year until ten years have passed.

* 1899 was an unfortunate year, the deaths from phthisis equalled the total of the four preceding years

In statistics for prisoners over ten years in prison being drawn from one case must be accepted with reserve

The whole table is on too small a scale and requires confirmation by other observers, but taking it as it is, it would appear probable that fully two-thirds of the whole were infected prior to admission. Theodore Williams found that in 802 living patients the average duration of the disease was 8 years and 2 months, and of 198 fatal cases 7 years and 8 7/2 months. If we knock off 50 per cent from their computation, on account of climate, mode of living, treatment, &c., we would still find two-thirds of the phthisis imported.

The state of health of prisoners on their admission to jail has undoubtedly an important bearing on sickness and mortality. The criminal class is said to be short lived, at any rate it would be reasonable to suppose that the vicious lives led by a large proportion would pave the way for disease in general.

In Calcutta the abuse of opium and cocaine is very common, and the population of the Presidency Jail is largely composed of habitues of these drugs, many being admitted actually at death's door.

I find that from 1896 to 1901 only 55 per cent of new admissions were received in good health, 33 per cent in indifferent, and 12 per cent in bad health.

Of the 36 fatal cases of phthisis 12 only were admitted in good, 13 in indifferent, and 11 in bad health.

I give below an analysis of the 36 fatal cases at the Presidency Jail referred to above.

These notes are condensed for the sake of brevity. Unfortunately the records of 8 cases have been destroyed.

Notes on fatal case of tuberculous disease at the Presidency Jail from 1895 to 1901

- 1 H M., admitted in good health, in jail 11 years 1 month age at death 36, no records
- 2 * N R., admitted in indifferent health, in jail 2 months 13 days, age at death 26, no records
- 3 * S J., admitted in indifferent health, in jail 1 month 5 days, age at death 38, no records
- 4 * N B., admitted in indifferent health, in jail 6 months 9 days, age at death 25, no records
- 5 M B., admitted in good health, in jail 1 1/2 years, age at death 28, no records
- 6 S N., admitted in indifferent health, in jail 5 1/2 years age at death 34, no records
- 7 G B. admitted in good health on 29th July 1892, pleurisy 22nd June 1894, chest pain and cough 26th June 1895, died 31st July 1896. *Post-mortem*—Tubercular meningitis, tubercle of lungs (extensive), liver, kidneys, age at death 34
- 8 * U M., admitted in indifferent health, in jail 9 1/2 months, age at death 28, no records
- 9 * B G., admitted in indifferent health, in jail 2 months age at death 35, no records
- 10 * R S P., admitted in bad health on 30th October 1897, "an absolute skeleton," died 4th December 1897. *Post-mortem*—Tubercle of lungs. Age at death 30
- 11 * K. K., admitted in bad health 11th May 1897 with diarrhoea, died 9th December 1897 tubercle of left lung and pleura and large intestine. Age at death 28.

12 S T., admitted in good health, 23rd August 1893, losing weight from admission, spent most of his time in special and convalescent gangs, had dysentery in February 1895 and July 1896, died on 14th January 1898. *Post-mortem*—Tubercle of both lungs and large intestine, Age at death 30

13 * H L S., admitted in bad health, 17th April 1896 with diarrhoea from which he suffered on and off till death on 24th June 1898. *Post-mortem*—Tubercle of peritoneum and large intestine, lungs free (this was returned as death from phthisis). Age at death, 27

14 * A C G., admitted in indifferent health, 23rd September 1898, had dysentery 10th October 1898, died 3rd January 1899. *Post-mortem*—Tubercle of both lungs and large intestine. Age at death 35

15 K K., admitted in indifferent health, 7th December 1896, no symptoms till 22nd April 1898, influenza followed by rheumatism, phthisis diagnosed October 1898, died 11th January 1899. *Post-mortem*—Tubercle of both lungs, large and small intestine. Age at death, 52

16 * H P K., admitted in bad health, 1st November 1898, with phthisis, died 24th March 1899. *Post-mortem*—Tubercle of both lungs, large and small intestine. Age at death, 30

17 M L A., admitted in indifferent health, 16th February 1897, with piles, 22nd February 1897 diarrhoea, spent nearly all his time in special gang, died 30th March 1899. *Post-mortem*—Tubercle of both lungs, large and small intestine. Age at death, 37

18 * L H J., admitted in bad health, 22nd January 1899, emaciated, anæmic, large spleen with phthisis, died 7th April 1899. *Post-mortem*—Tubercle of both lungs, large and small intestine. Age at death, 22

19 * K C H., admitted in good health, 23rd August 1897, diarrhoea, 3rd September 1897, hæmoptysis, 26th September 1897, died 7th May 1899. *Post-mortem*—Tubercle of both lungs and large intestine. Age at death, 25

20 G A., admitted in good health, 21st September 1896, bronchitis, 1st March 1897, dysentery, 2nd May 1899, spent most of his time in special gang, died 2nd July 1899. *Post-mortem*—Tubercle of both lungs. Age at death, 27

21 P B., admitted in good health, 17th June 1895, dysentery, 12th September 1895, spent most of his time in special gang, died 25th July 1899. *Post-mortem*—Tubercle of both lungs, sigmoid flexure and rectum. Age at death, 45

22 * B D., admitted in good health, 8th February 1898, hospital for phthisis, 30th March 1899, died 29th August 1899. *Post-mortem*—Tubercle of both lungs, right lung "absolutely destroyed." Age at death, 31

23 * B., admitted in indifferent health, 7th December 1896, commenced to lose weight, 10th January 1897, spent most of his time in special gang, died 2nd September 1899. *Post-mortem*—Tubercle of both lungs and large and small intestines. Age at death, 50

24 K C S., admitted in good health 25th June 1894, diarrhoea, 18th December 1897, ague, 5th May 1899, phthisis, 17th August 1899, died 16th October 1899. *Post-mortem*—Tubercle of left lung, empyema. Age at death, 26

25 B S. admitted in good health, 24th December 1891, anal abscess, 7th June 1897, ague twice, 1897 and 1898, phthisis, 12th July 1899, died 19th October 1899. *Post-mortem*—Tubercle of both lungs. Age at death, 29

26 S G M., admitted in good health, 28th November 1898, ague, 22nd June 1899, then began to lose weight, died 29th October 1899. *Post-mortem*—Phthisis of both lungs. Age at death, 27

27 * I S., admitted in bad health on transfer 3rd February 1899 direct to hospital with dysentery, died 26th January 1900. *Post-mortem*—Tubercle of small intestine. Age at death, 29 (This case was returned as phthisis)

28 H K., admitted in good health, 5th February 1896, ague 15th November 1898 and 27th December 1899, phthisis, 20th January 1900, died 2nd April 1900

Post-mortem—Tubercle of both lungs and large and small intestines Age at death, 31

29 * M P, admitted in bad health with phthisis on 6th March 1900, died 23th May 1900 *Post-mortem*—Tubercle of both lungs Age at death, 22

30 * M S, admitted in bad health, 22nd September 1899, with phthisis, died 29th May 1900 *Post-mortem*—Tubercle of both lungs and small intestine Age at death, 36

31 P. R., admitted in good health on 13th April 1898, ague, 9th August 1899, then began to lose weight, died 9th August 1900 *Post-mortem*—Tubercle of both lungs and mesenteric glands Age at death, 30

32 * S A, admitted in bad health with "cirrhosis of liver" on 16th June 1900, died on 19th December 1900 *Post-mortem*—Liver small and fibrous, tubercular Tubercle of both lungs and mesenteric glands Age at death, 38

33 * S T, admitted in bad health with diarrhoea on 28th February 1900, died 10th March 1902 *Post-mortem*—Tubercle of both lungs, mesenteric glands and large intestine Age at death, 30

34 * H M, admitted 19th February 1901 in bad health with phthisis, died 15th July 1902 *Post-mortem*—Tubercle of both lungs and large and small intestine Age at death, 26

35 R K D, admitted 9th December 1897 in indifferent health, commenced to lose weight in January 1899, died 1st October 1901 *Post-mortem*—Tubercle of both lungs and large and small intestines Age at death, 63

36 R D L, admitted, 31st October 1900, in indifferent health, phthisis, 30th August 1901, died 5th October 1901 *Post-mortem*—Miliary tubercle of both lungs. Age at death, 40

I am of opinion that the cases marked with an asterisk had become infected with tubercle prior to their admission to the Presidency Jail. Of the other 16 cases it is by no means certain that the disease was contracted in jail in all cases.

The fact which struck me most in looking up these records was that very extensive disease of the intestinal tract may exist with practically no symptoms except an occasional attack of diarrhoea.

Admissions to hospital in jail for phthisis are not criteria of any value in estimating the duration of the disease.

The jail hospital is reserved for serious cases, and a large number is treated in the special convalescent and phthisis gangs. I find that the actual stay in hospital has no relation to the duration of the disease.

Cases Nos 7, 15, 20, 21, 24, 25, 26, 28 and 31 seem to have contracted the disease in jail. Calculating the duration of the disease from the first reliable symptom the average works out at something under two years for each case.

Several out of the 36 were only diagnosed after death.

Special interest attaches to these statistics from the fact that the Presidency Jail is the only jail in Bengal where a *post-mortem* must be made on every case and where an inquest is held on every death.

Of the 36 cases, 23 were Hindoos and 13 Mahomedans. Taking into consideration the relative populations the mortality is roughly speaking equal in each class.

The ages of the 36 cases are—

Age 20—25	2 deaths
" 25—30	13 "
" 30—35	9 "
" 35—40	7 "
" 40—50	2 "
Over 50	3 "
Total	36

Has the disease become more prevalent? Below I give Bengal statistics ranging over 27 years, from these it appears that the mortality rate has remained fairly constant, while the admission rate has increased. This may mean that the number of cases has increased, or it may mean that there have been more re-admissions of individual cases.

BENGAL JAILS

	RATIO PER MILLE OF AVERAGE STRENGTH				Deaths from all causes
	TUBERCULAR DISEASE		OTHER RESPIRA TORY DISEASES		
	Admissions	Deaths	Admissions	Deaths.	
1875	8 1	3·2	42 3	4·2	50 4
1880	9 9	3·9	55·0	6·3	65·0
1885	7·7	2 6	43·0	4·0	76 1
*1889	6 7	2 9	46·0	4·8	52·8
1895	6·7	2 3	56·0	6 5	26·9
Average of 7 years ending 1901	11·2	3 9	54 7	4 8	29·2

In the Presidency Jail only males over the age of 22 are admitted. This fact must be taken into account when considering the statistics of that jail. I have, moreover, dealt exclusively with the disease as affecting native prisoners.

Since writing the above I have compiled the statistics of death from tubercle of the lungs at the Presidency Jail during the year 1902. Ten cases in all (including one under-trial prisoner and one discharged from considerations of humanity) died during the year. Of these six were admitted suffering from the disease, and one at least of the remaining four was probably infected prior to conviction.

If the scanty details that I have been able to collect are of any value, it would appear probable that there is no reason to believe that tubercle of the lungs is more prevalent in Bengal jails than amongst the general population, nor that it has become more prevalent in recent years.

Personally I am of opinion that the disease is far commoner outside.

If the medical officers of other Central jails would publish their experiences, we would have very valuable data for comparison.

* The report for 1890 is not at present forthcoming. I have therefore given the figures for 1889.

CHOLERA IN THE DISTRICT OF PURI, WITH A SPECIAL ACCOUNT OF THE EPIDEMIC DURING THE YEAR 1901

By H SEN, M B

CHOLERA is endemic in this district as in most of the other districts in Bengal, sporadic cases are known to occur throughout the year as will appear from the statement attached

The statement shows the mortality from cholera for each of the month during the twelve years from 1890 to 1901 for which figures could be found. Except in the year 1898, which shows the lowest mortality (432), there had been over a thousand deaths during each of the years. In 1892 the highest number of death was recorded (10,686), next comes the year 1901 with a mortality of 9,363, and next to that the year 1897 with a mortality of 9,050. The fact is significant the endemic seems to blaze out into an epidemic cyclically once in every fourth or fifth year as

July is the worst month and January the best, the several months coming in the following order of precedence No 1 July, 2 June, 3 August, 4 May, 5 March, 6 April, 7 November, 8 December, 9 February, 10 October, 11 September, 12 January

There are three exacerbations during a year, the first in March, the second in July, and the third in November, the largest being that in July

The several exacerbations are to be attributed partly to climatic conditions and partly to religious gatherings which come on every year regularly and are a particular feature of the town of Puri, the chief centre of infection. The Lokenath festival takes place in March at the outskirts of the town and attracts thousands of people—all local. The great feature of this festival is the enormous preparation and consumption of a sweet offered to the god and made up of the most indigestible of articles, viz, ripe cocoanut, rotten plantain, *chura* (dry pressed rice), and molasses of the worst kind

Statement showing the mortality from cholera for each month in the years from 1890 to 1901

Months	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	
January	137	83	134	43	41	66	53	55	252		99	68	
February	764	95	138	103	61	43	507	49	66	7	113	167	
10 000 March	1 006	153	656	93	173	26	732	328	44	13	196	1 428	10,000
9 000 April	131	104	1,064	58	230	73	229	405	42	117	327	1,903	9 000
8,000 May	21	23	2,409	11	69	8	97	841	6	259	167	1 808	8 000
7 000 June	441	22	2 986	23	96	115	52	3 107	2	542	317	922	7 000
6 000 July	324	15	821	424	177	382	336	2 168	1	2 234	1,035	1,239	6 000
5,000 August	69	6	979	660	218	184	860	1,132	2	818	493	789	5,000
4 000 September	16	5	120	93	28	102	302	417	2	133	223	378	4 000
3 000 October	12	77	214	77	132	445	70	284	5	62	150	258	3,000
2 000 November	134	234	935	95	258	697	17	233	2	70	156	163	2 000
1 000 December	278	218	230	73	210	1 187	50	81	8	87	147	240	1,000
0													0
	3 333	1,035	10,686	1,753	1,992	3,328	3,305	9,050	432	4,342	3,423	9,363	

will clearly appear from the diagram drawn in the body of the statement. The only explanation of this seems to me to lie in the life-history of the microbes originating the disease. The microbes multiply as the conditions favourable to their growth increase in intensity. When conditions have reached their greatest intensity, I mean the height of insanitation, the microbes attain their highest development. They reach the limit of multiplication, and then in virtue of a certain well-known law of nature they cease to grow any more and die of inanition.

As to the incidence of the disease, taking the averages of the twelve years, it will appear that

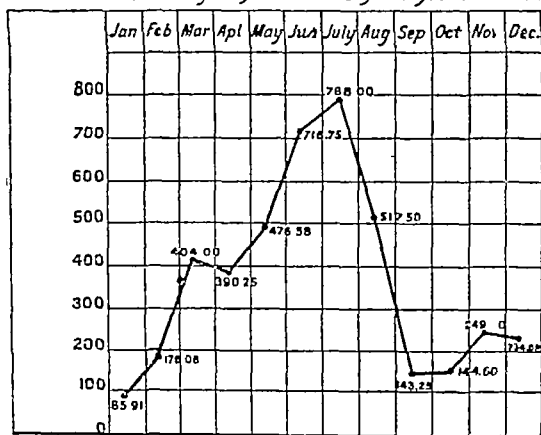
black as tar and full of all manner of dirt. In June takes place the great Rathjatra festival, on which occasion some lacs of people from different parts of the country gather in the town of Puri.

Many of the pilgrims come in the worst of health, most are wretchedly housed and all are miserably fed. In November there are no big festivals nor gatherings, and the exacerbation has been less marked. It is due more to climatic causes than to anything else. Of the three rises in the course of the disease during a year, that in July is the greatest, and was most marked during nine out of the twelve years under

consideration This must be due to the immense gatherings under the most insanitary conditions that take place regularly during the month of June every year

The rise during the month of March was most marked during five of the years In 1890 and in 1901 the mortality during the month was the highest As regards the seasonal intensity of the disease, during the several years, it has been found that no particular month has been invariably the best or the worst Taking, however, the averages into consideration, it would appear plainly that from its greatest fall in January the disease rises steadily

Diagram showing the incidence of Cholera mortality in the district of Puri based on the averages of the twelve years from 1890 to 1901



month after month till it reaches its acme in July, then it suddenly falls during the next two months, August and September, to a very low level approaching the minimum of January The first rise in March and the third in November are much less marked They are far below the height reached in July

THE EPIDEMIC IN 1901

As usual the year opened with sporadic cases of cholera in the district, they were at first confined to two of the thanas There was no first case from which to trace the epidemic, which broke out in a very virulent form in March From 68 in January and 167 in February the mortality rose to 1,428 in March This sudden onset of the epidemic was due to the Gabinda Dwadasi Mela on which occasion some 30,000 pilgrims gathered in the town of Puri The mela came off on the 1st and 2nd of the month

On the third 14 cases occurred among the pilgrims From the town as the centre of infection the epidemic spread like wild-fire throughout the district following the tracks of the returning pilgrims They left the town with soiled clothes and polluted water, and they washed their bodies in tanks and wells on the way That polluted sources of drinking water were at the root of the spread of the disease could be easily traced. To cite only one in-

stance in a village called Bilkhowrim a boy was the first victim He came from an adjoining village affected with cholera and died His dirty clothes were washed in the only tank which supplied water for drinking and other purposes to the village The disease spread all over the place carrying 28 out of a population of 318 within 15 days The tank was very shallow and was choked with weeds In this case from the boy two other members of the same family got the disease and from them the others in the village The disease was not confined to any particular class of people, but the washermen in some villages suffered the most The epidemic was preceded by a long spell of unusually sultry weather The rainfall in the previous year was 65.16 inches and was above the average; the well water-level was pretty high at the time A general diarrhoeic condition was prevalent with the epidemic In April the epidemic reached its maximum height when the mortality was 1,903, in May it fell down to 1,808, in June, the next and driest month, it fell still lower to 922 In July when the rains set in and the great Rathajatra festival took place the mortality again rose very high, the number being 1,239 From August the mortality fell rapidly down till it reached its lowest in November The rate of mortality was very high, it was above 84 per cent The population of the district according to the last census was 1,017,286

The total number of deaths during the year was 9,363 or 91.94 per mille of the population The majority of the population are Hindus and almost all belong to the cultivating class, the number of Mahomedans in the district is very small As noted above, the disease is endemic in the district due, no doubt, to its physical features and its grossly insanitary conditions The endemic flares up into an epidemic from combination of circumstances more or less beyond human control, large gatherings, high temperature, dearth of good drinking water, scarcity of food, exposure, exhaustion, the filthy surroundings among which the people live, the ill-ventilated badly lighted huts in which they dwell, their primitive habits, and want of education are factors which, coming together, lead to an outbreak There is no regulation for reserving the sources of drinking water, cattle are let in, people bathe, wash their clothes and utensils and sit on, for purposes of nature, on the bank of the same tank from which drinking water is drawn Clothes of infected patients, the mats and the charpoys they lie on, are never destroyed, all are washed in the same tanks and taken home When a patient dies, the cloth and perhaps the mat which were last used are burned Much of the filth, the vomited matter and the stools, directly or indirectly find their way also in to the tanks

There is no such system as trenching or burning the filth Houses are built with no provision for ventilation or light Filthy drains run along,

the compound, fermenting pots of rice water for cattle stand at the doors, and cattle are invariably penned in the same block where the people themselves live, in fact, the best room in the house which stands on the street and through which the house opens into it, is given over to the cattle. This is done because cattle are held so dear and sacred by the people, and cowardly they must tread upon and so purify themselves every time that they go out and come in. Each house has got a narrow strip of compound, opening into which are small lowly built, gloomy-looking huts, stacked with all sorts of lumber. In such a hut I have seen three cholera cases lying together, and have known instances where one person dying, another was brought in and when the second died a third was there, in the meantime nothing whatever had been done to remove the articles from it or disinfect the room. In other instances I have seen the sick and the healthy lying together in the same place—one dead, a second dying, and a third brought in to die. There is no latrine arrangement in any house, in the day-time the people go and sit on the bank of the tanks for the water is handy there, in the night-time they sit just outside the house under a bush or a jungle which are purposely grown all round. All the medical officers in charge of the mofussil dispensaries, three special hospital assistants, all the inspecting officers of the vaccination department, and the chief medical officer himself went out equipped with drugs and disinfectants, visited all the infected villages, distributed medicines freely, treated the patients at their home, disinfected wells, instructed the people to use nothing but boiled water, destroy fomites, trench or burn the filth, and disinfect their houses.

But all measures prove fruitless. The epidemic seemed to run its own course without let or hindrance. Disinfection of wells might have had some influence in checking the spread of the disease, but treatment was apparently a total failure. The circumstances were against treating an epidemic successfully, for the task of thorough disinfection of the insanitary surroundings was a Herculean one, and the prejudices of the people were too deep-rooted to be easily overcome. They refused treatment, hated disinfection, and were too indifferent to listen to and carry out instructions. If to treat an epidemic successfully is not possible, to prevent one is quite within the domain of practical politics. For this purpose radical measures should be adopted. I have given before a picture of the country life. It is an ugly picture. Puri is an open country at the sea coast, having a sandy soil not encumbered with deep and dense jungles. But I have noticed that the more open a country is, the more liable it is to the ravages of cholera. To improve country life I would suggest each village to be laid out on the best

sanitary principles. The scheme is quite practicable. My suggestions are 1st, that each village should be provided with one or more reserved tanks or wells situated at convenient places for the supply of drinking water, 2nd, that there should be public cattle pens, having separate enclosures for each family, situated on the northern side of each village just outside it, 3rd, that there should be field latrines laid out away from all sources of water-supply, changed and brought under cultivation as often as required, all the village people being made to go nowhere but to these fields, 4th, that the people should be induced to build their houses according to a prescribed plan securing all necessary sanitary requirements. To encourage the people to do this, small rewards may be given now and then for the best built and best kept houses. The people would build of course according to their means, but they should build according to a certain model drawn up for them, 5th, that each village should be provided with places where to burn or bury dead bodies, strict watch being kept to see that all dead bodies are decently disposed of. During the last epidemic I saw sights never to be forgotten. Bodies were thrown out on the fields just outside the villages to be devoured and disposed of by vultures, jackals, dogs and wolves. The people could not bury nor burn them, 6th, that a rough plan of each village showing the several places indicated above should be drawn up and kept hanging in the *Bhagaboth Ghor*, or the village public room where the villagers meet to amuse themselves or discuss public affairs. The suggestions made above about modelling a village and keeping it in order should be carried out by the people themselves under the supervision and guidance of the district medical officer and the district engineer. The village union should be held responsible for this, the most important work that they can have. They should see that the tanks, the cattle pens, the latrines, the burial and burning grounds are kept in order. For this purpose a fund should be created, all the villagers contributing towards it, but all need not pay in cash, the poor may discharge their obligations by personal services, for instance, if a tank is to be re-excavated or cleaned they may do the excavation themselves, 7th, and, lastly, the most important measure of all is to educate the people, for education only can teach them what is good and what is bad, how diseases originate and spread, how they can be avoided and prevented. In this connection I may note that the district medical officer, as well as those in charge of mofussil dispensaries, or those specially deputed during emergencies, cannot do better than take the occasions, when they are on tour, to lecture to the people about the principles of hygiene and preach to them the good of sanitation. I have known from experience that such preaching has a great

effect upon them, popular lectures on the subject of health might be most effectively and usefully given to the people during big gatherings, warning them of the bursting of an epidemic and so arming them against it. On such occasions leaflets, printed in vernaculars, describing the origin, spread, prevention and treatment of epidemic diseases, may be freely distributed among them. Measures, as above, if adopted, will free the country not only from cholera, but also from malaria and other fell diseases which are its curse.

3. History of Hospital Practice.

A CASE OF "BLASTOMYCETIC DERMATITIS" IN A CHITRALI

By R. McCARRISON, M.B., B.CH.,

LIEUT., I.M.S.

M.O., 14th Goorkha Rifles

In the accompanying photograph, the hand of a man is seen affected with that rare disease described by Gilchrist and named by him "Blastomycetic Dermatitis"

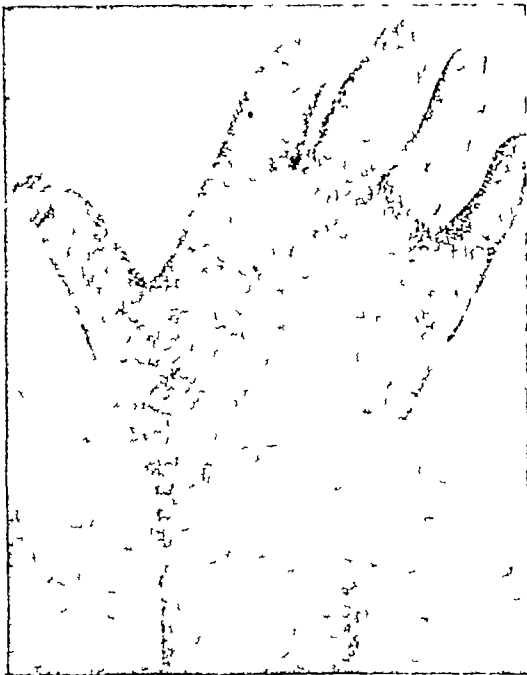


Fig I shows the extent of the disease on admission into hospital

This case is of especial interest, as hitherto no case of this disease has been described in India, and only two cases outside the United States. An added interest attaches to it in that it is what may be called a 'young' case. Most of the recorded cases so far as can be determined from the literature of the subject have been of considerable standing when first seen, whilst in this particular case the duration of the disease

when the patient was admitted into hospital was only two months. A rare opportunity has thus been afforded of observing the progress of the disease in the early stage.

Case—An old man, native of Chitral, aged about 50 years, occupation priest and cultivator, came to the dispensary at Kila Dosh complaining of a flat sore on the back of his right hand.

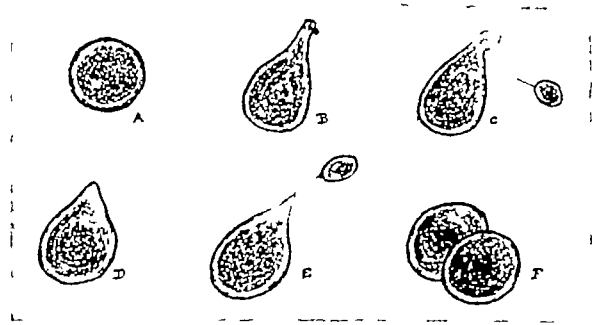


FIG II—Organism seen in specimens of pus taken from case of Blastomycetic Dermatitis. Shows different stages of budding process (Size 12/14) (Pen and ink drawing)

History and family—Good. There was no history of syphilis, tubercle or cancer in his family. His father and mother both "got pain in the chest and died in about a week" (presumably from pneumonia). There were no other points of interest.

B. Personal—He is a robust and sturdy-looking old man, giving no history of any previous disease with the exception of a few attacks of what was in all probability malaria. No history or signs of tubercle, syphilis or cancer.

On examination—His heart, lungs and abdominal organs are normal, as is also the temperature.

History of present affection—Two months ago when out collecting branches for firewood, he, with a piece of wood which he was breaking, scraped the back of his right hand about one inch from the knuckle joint of the middle finger. He immediately washed the wound, which was superficial, in a stream which was running past the spot. For two or three days he noticed nothing, and had no pain in the part. About the third day the wound and skin around it began to itch, and on fourth day, after the receipt of the injury, the back of the hand swelled up to a height of about one inch. After this what he describes as "duty blood" began to be discharged from the site of the original wound which was the centre of the swelling. After a few days the swelling subsided, leaving a small red ulcer which began to spread slowly in every direction. He complained of no pain at any time in the parts affected, but of considerable tenderness to the touch, when the feeling is described as "burning". The condition continued to spread slowly up to the present time exactly two months from its first appearance.

Examination of the part—The extent of the disease is seen in Fig I. It occupies the back of the hand, is limited above by a line running through the long axis of the thumb when at right angles to the palm and in the same place. It extends for a short distance along the back of the fingers (Fig III). Laterally it reaches almost to the borders of the hand.

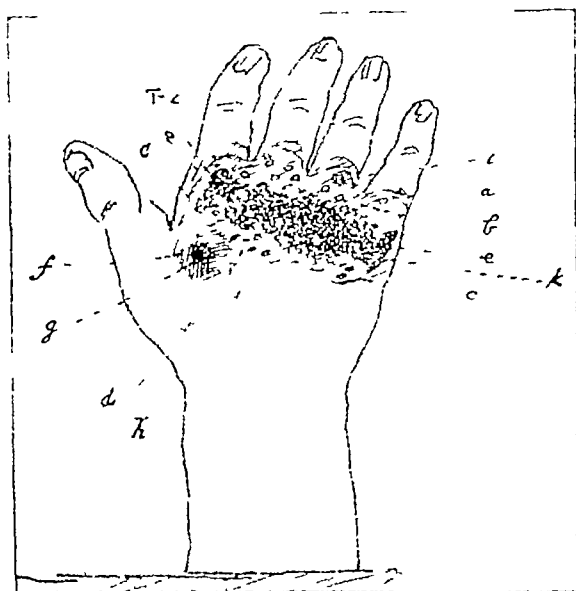


FIG III—Diagrammatic sketch showing (a) everted cuticle, (b) small abscesses subepithelial, (c) raised edge of lesion, (d) smooth shiny zone merging into, (e) warty meshwork with its numerous little abscesses in the meshes, (f) large subepithelial abscess, (g) dark red scab, (h) blush of redness, cuticle not yet shed but raised from surface, (i) scabs where abscesses have broken down, (k) red papillary 'ulcer' becoming continuous with warty meshwork.

The lesion is markedly defined first, by the cuticle of the healthy skin stopping abruptly at its edge, and secondly, by the raised reddish infiltrated edge of the sore itself. The whole lesion is superficial and confined entirely to the skin which can be moved freely over the underlying tissues. There are two well marked zones, an outer dark reddish smooth portion which has a shiny appearance due to the absence of cuticle. Underneath the surface of this area, the extent of which is diagrammatically indicated in Fig II d, d, numbers of minute subepithelial collections of fluid are seen. From those nearest the advancing edge a blood-stained pus can be expressed whilst in those more centrally situated the pus is white. Where these abscesses have burst red scabs of varying sizes have formed. At the situations seen in Fig III k, the original ulcer has advanced to the margin of the hand where it is limited by the thick everted cuticle of the part of the hand and by the raised infiltrated border of the sore. These areas form part of the central zone hereafter described. This external zone gradually merges into what is the most characteristic feature of the lesion, namely, the second zone above referred to. It constitutes

the base of the lesion, is soft and supple, and is made up of numerous small papillæ which project from the surface and which appear to join together at their bases forming a sort of meshwork. From the meshes of this network pus can be squeezed. Each mesh seems to contain a very minute abscess. The papillary projections are pinkish in colour and vary in size, those in the centre of the lesion, which is the oldest part of the sore, are larger and about the size of a large pin-head. They project about $\frac{1}{8}$ th of an inch above the level of the rest of the sore, and in this situation approximate more closely to this normal epithelial appearance of the healthy skin. The papillæ become smaller as they gradually merge into the smooth external zone, Fig III l, or redder as they become continuous with the bright red, papillomatous, "active" parts of the area (Fig III i, k.) Pus exudes from the meshes of the network described when the hand is held in the dependent position.

A pronounced odour becomes apparent when the hand is approximated to the observer's face.

There are no other lesions on the body, and no glandular enlargement in the axilla of affected arm or of the lymphatic gland at elbow joint.

The patient was admitted into hospital and carbolic dressings applied, after thorough cleansing of the part.

On the fifth day after admission the pus was examined microscopically.

There were two varieties of pus for examination—1st was taken from the external zone or advancing edge, and was obtained by pricking some of the numerous small abscesses in that situation, it was blood-stained, and when examined answered to the description of what is generally known as "active" pus. The 2nd variety was taken from the central zone or base of the sore, it was white in colour, granular, and on examination was seen to contain much debris. In both varieties an organism was seen in every smear examined having the following characteristics. It was oval or spheroidal in shape, doubly contoured, about twice the size or larger, of a red blood corpuscle (12–14 μ), contained a granular protoplasm which, in some of the organisms, was more coarsely granular towards the centre. Many showed evidence of budding (Fig II B, C, D, E). The smears were all examined fresh and unstained. Liquor Potassæ was added to the smears for the purpose of bringing out the organism more clearly as recommended by Gilchrist.

Attempts were made to cultivate the organism, and for this purpose four glycerine tubes were inoculated. The organism grows fairly well according to Hyde and Montgomery in this medium, and makes its appearance thereon about the fourth day. It may be here stated that no growth was observed in these tubes, and this was no doubt due to the cold in these parts.

and to the fact that a suitable constant temperature could not be maintained owing to lack of appliances

After this time smears were examined daily, but in no case was the organism above described absent.

The organism was held to be *Blastomycetes* and the fact of its constant presence in the pus, together with the clinical characteristics of the disease as above described, was taken as sufficient evidence to justify the diagnosis of *Blastomycetic Dermatitis*

Treatment—The patient was put on increasing doses of potassium iodide commencing with five grains thrice daily. The carbolic dressings were continued.

Progress of the case under treatment—One fortnight after admission there was considerable improvement especially at the base of the lesion. Pus could not now be expressed from the minute abscesses between the papillæ over the greater part of this area. In the advancing edge, however, there is no marked alteration. The area indicated at k, Fig III, continues the same, and is markedly tender to the touch. At knuckle joints a few small dark red coloured scabs are seen from beneath which a foul swelling pus can be squeezed. A large subepithelial abscess has formed about one inch in diameter in the situation indicated in Fig III F. This abscess, of which the walls are very thin, has burst, and a dark red scab has formed over the orifice at G, Fig III. (This scab was removed, all the pus squeezed out of the abscess and the inside swabbed out with pure carbolic acid. Patient objected very strongly.) Several smears of the pus squeezed from this abscess were taken. The organism was found in all.

There is a well marked triangular shaped flush of redness at the upper edge of the lesion (Fig III h) over what was previously healthy skin. There is marked itching in this part. The cuticle over this area is raised from the surface as if about to peel off. There are at the bases of the fingers a few small subepithelial abscesses filled with white pus.

One week later—Base of lesion appears to have healed. No pus can be expressed from between the papillæ. The region (at K, Fig III) is no longer markedly tender, and little pus can be squeezed from this area. The abscess (Fig III f) is now represented by a bright red, papillary surface. The blush of redness has disappeared. The cuticle is shed over about half the area where blush existed, but no subepithelial collections of pus are seen over the area. At the base of the third finger the disease is still seen to be spreading. Here there is a small abscess which was pricked and three drops of pus, the size of a pea, pressed out. (Pus examined. *Blastomycetes* present.) The interior of this small abscess

was treated with pure carbolic. Odour is masked.

Patient wears for his home, asks to be allowed to go, objects to surgical treatment. He is now taking grs 15 thrice daily of potassium iodide.

Three days later—The condition is greatly improved, and patient wishes to leave hospital. He went to his home on the following day.

Observation on the spread of the disease in the parts affected as exemplified by the case

The *blastomycetes* grows on artificial media in about four days, and from the very definite history in this case it may be assumed that the incubation period was four days. The organism was probably introduced into the skin by the stick causing the abrasion. The growth of the organism in the skin gives rise to an active reaction evidenced at first by redness and itching. The cuticle then peels off leaving the deeper layers of the epidermis, defined by a raised infiltrated edge, exposed and shiny, and the seat of numerous small collections of fluid. These break down singly, or join together, forming a larger abscess which, on bursting, discharges a blood-stained pus, in which the organism is found. It is foul smelling and doubtless there fore the infection is mixed. A scab forms where the abscess bursts which, on separating, leaves a bright red papillomatous lesion which proceeds to spread peripherally.

It is stated that the disease has a predilection for the face and extremities, this predilection may be explained perhaps in this way that the uncovered parts of the body are more liable to become abraded than those which are, as a rule, protected by clothing, and thus they are more liable to infection by the organism.

With regard to the clinical diagnosis of the condition, the disease has to be distinguished from lupus vulgaris, epithelioma, syphilis and verrucose tuberculosis, the full discussion of which will be read with interest in a recent paper on this subject by Professor Gilchrist of the John Hopkins University, published in the *British Medical Journal*.*

Concerning the treatment in this case, the condition markedly improved under potassium iodide and, but for the unpleasant fact that the patient ran away to his home when half-cured, would, I have no doubt, have caused his complete recovery.

I am fully cognizant of the many errors of omission in the study of this case especially with regard to its pathology. My isolation in this fort with absolute lack of appliances is my defence, whilst the great interest of the case is my excuse for the publication of these imperfect records.

* *British Medical Journal*, October 25, 1892

THE
Indian Medical Gazette
 APRIL, 1903

COLONEL THOMAS HOLBEIN HENDLEY,
 CIE, I M S

THE beginning of April sees the completion of Colonel T H Hendley's five years in the administrative post of Inspector-General of Civil Hospitals, Bengal, and brings to a close a singularly successful and remarkable career in India.

Thomas Holbein Hendley was born on 21st April 1847, and is therefore still under 56 years of age and four years short of the period of compulsory retirement. He received his medical education at St Bartholomew's Hospital, London, where he obtained two scholarships, was gold medalist in medicine and senior prizeman in anatomy. After obtaining the usual English diplomas of that day, he entered the Indian Medical Service and passed out of Netley fourth out of 39 candidates.

His first two years were spent in military employ in the 4th Bengal Cavalry, 4th Native Infantry and the Meywar Bheel Corps. From the last of these appointments he naturally gravitated to civil employ under the Foreign Department, under which he remained for 27 years. He was for 15 months Agency Surgeon in Malwai and for no less than 24 years Residency Surgeon, at Jeypore. During the last three years of his stay at Jeypore he was also Administrative Medical Officer in Rajputana. In 1897 he spent three months as Acting Inspector-General of Civil Hospitals in the N-W P and Oudh, and in April 1898 came in the same capacity to Bengal, from which office he now retires on completion of the usual five years' tenure.

Colonel Hendley's services have been of an unusually varied and interesting nature, because Foreign Office appointments afford exceptional opportunities for outside work.

For 18 years he was, besides being Residency Surgeon, the Superintendent of the Medical Department of a large Native State, and frequently held additional Political charge of the Residency. On one of these occasions, viz, in 1880, Maharaja Ram Singh, at that time admittedly the most enlightened chief in India—

was very ill, and it devolved on Dr Hendley to ask him who his successor would be, and he nominated the present Chief of Jeypore, who is well known for his orthodoxy and for his great liberality in the foundation of a Famine Fund for the State. This peaceful succession so greatly contrasted with the stormy installation of Maharajah Ram Singh, during which the Political Agent was assassinated, that it was fitting and natural that Dr Hendley should receive the thanks of Government and of the Viceroy himself.

Colonel Hendley has suffered from the very conspicuousness of his services to art and to politics, and critics have not been wanting who regarded him as an art critic and political officer rather than as a medical man. This, however, is a complete mistake, against which Colonel Hendley often protested. As a matter of fact, the purely medical and scientific duties of the Residency Surgeon of Jeypore are and were very multifarious. They include the executive charge of a fine hospital of one hundred beds, of a 1st class Meteorological Observatory in which the most modern automatic instruments are used, of numerous dispensaries, of a large staff of vaccinators, the general supervision of two Jails and a Lunatic Asylum, and the sanitary care of one of the largest cities in India. Much more varied advice is also required from the Superintendent of the Medical Department of a Native State in respect to medico-legal and many other matters than is usual in British India. During Colonel Hendley's last years in Jeypore he performed over 1,400 major operations, of which nearly 1,000 were for cataract. It is impossible to find space to detail Colonel Hendley's many other activities, we may mention, however, his remarkable contribution to the Opium Commission, where he gave details of over 4,000 cases of opium eaters.

We must also only mention the series of Medical Histories of Rajputana and of Bengal, which were either written by Colonel Hendley or of which he acted as Editor-in-Chief, among the most recent of these are Lieutenant-Colonel Crawford's valuable *History of Hooghly* and Major Tull-Walsh's sumptuous and interesting *History of Murshudabad*.

The accident of Colonel Hendley's being asked in 1880 by the Resident to reorganise a Museum for Jeypore led to the creation of the new Museum for which he collected over 20,000

objects, and which has now an average of over a quarter million visitors every year. He also managed the first Exhibition of the Imperial Institute in London, he presided at the second Decennial Art Conference at Lahore, at which the fate of Schools of Art in India was decided by their retention.

In April 1898, Colonel Hendley came to Bengal as Inspector-General of Civil Hospitals, at a time when Calcutta was going through all the worry of a first invasion of plague.

It is too near the time for us to appraise the merits or, it may be, the demerits of Colonel Hendley's regime in Bengal. Colonel Hendley is too energetic and too enthusiastic over schemes which he has started not to arouse some opposition, and while we admire many of the reforms and improvements effected by him during the past five years we must make one important criticism, and that is that Colonel Hendley, when he issued circulars, called for reports, and urged on improvement, did not always realise or remember that the average Civil Surgeon in Bengal is a very hard-worked man, that his work has enormously increased within the past ten years, that he has had plague to worry him in many districts, and that, owing to military exigencies and other reasons, transfers have been many and expensive, and that in fact he has not the time, nor indeed the funds, to carry out the many projects of improvement so enthusiastically urged by his Chief. Therefore when a Civil Surgeon received orders to make more frequent inspections of remote and unimportant dispensaries (the total monthly income of which fell far below the travelling allowance of the Inspecting Officer), or when he was urged to make improvements and buy new furniture and instruments for his dispensary—an institution supposed to be supported by the local municipality, but really kept a-going and progressive almost entirely by the activity and repute of the Civil Surgeon—it was perhaps but natural that he should grumble and assert that Colonel Hendley knew more of the necessities of the mofussil dispensaries than he appreciated the difficulties of the Civil Surgeon, who was perhaps more often hindered than helped by a Committee which was, with every good intention, brought into existence to afford him aid.

We need not further allude to this point, but we must in all fairness give Colonel Hendley his share in the credit for all the very real and

substantial progress made by the Medical Department in Bengal for the past five years. The urging of Colonel Hendley, followed up by the energy of capable Civil Surgeons, has now provided nearly every Bengal Station with a good hospital, well equipped, fairly endowed, and replete with modern and up-to-date improvements which would simply astonish the Civil Surgeon of even ten years ago. Go where one will in Bengal, everywhere one will see new hospitals finished or being built, and for this the Civil Surgeons, who have borne all the burden of the day, will not deny to Colonel Hendley the credit of initiation and advice.

In his last Triennial Report on the Medical Institutions of Bengal, Colonel Hendley himself mentions some of the landmarks of medical progress of the past few years, among these is the transfer of medical education from the hands of the Director of Public Instruction and the University Faculty to those of the Head of the Medical Department in the Province. Next we may mention Colonel Hendley's efforts for the spread of the teaching of the elements of hygiene as part of the curriculum of the Calcutta University, then comes the publication of a trustworthy list of medical practitioners in Bengal, the introduction of post-graduate classes in legal medicine for Civil Hospital assistants and last, but not least, the institution and throwing open of a valuable medical Library for the use of medical men of all classes in Bengal—a long-felt want in India.

We must now conclude our review of the remarkable and successful career of Colonel Hendley in India, in another issue we will give a list of the chief books published by him, which show the many-sided abilities of the man.

MR JONATHAN HUTCHINSON ON LEPROSY

As many of our readers are aware, Mr Jonathan Hutchinson lectured recently in Calcutta and elsewhere on his views as to the causation of leprosy. We do not know whether Mr Hutchinson gained much or any information from the large number of medical men who listened to him in the fine theatre of the Chemical Department of the Calcutta Medical College. We have no hesitation in saying that the discussion and criticism of Mr Hutchinson's views was disappointing in the extreme. The

two or three Indian gentlemen who got up to speak on the conclusion of the lecturer's address seemed to have entirely failed to follow the line of the lecturer's reasoning, or if they did, their speeches, eloquent though they were, gave little evidence of it.

We admit the speakers were at a disadvantage, they were speaking without having prepared their brief against a man who has made the subject a special study and had innumerable facts and figures at his fingers' ends.

What then is Mr. Hutchinson's fish theory of leprosy? It is the old and at one time popular belief that leprosy is in some way connected with the use of fish as a food, but this is not all. It is not fresh fish, but tainted fish, it is not quite rotten fish but rather partially cured or imperfectly preserved fish, of which the continued or frequent use produces the disease *de novo* in the human system.

Mr. Hutchinson with great ability sketched the history of the use of fish as a diet and showed how in the middle ages in Europe fish was an almost invariable article of diet, that as time went on fish became less commonly a staple food, other food stuffs became more common, the spread of the Reformation led to the abolition of the "fish fasts" ordained by the Roman Catholic religion. Moreover, fish became more expensive when better means of exportation arose, and the use of salted fish became more common in inland districts. Another point was well emphasised by the lecturer. He showed that though an universal disease, known historically or at present in nearly every race and clime, yet at the present day and indeed always leprosy was after all a rare disease. Here and there cases could always be found, but the disease never spread widely, but was always to be found among certain groups of villages or families. Even in India there are not more than one lac of lepers in all its teeming millions, and in Norway it is only 5 per 10,000, in Ceylon it is 18 per 10,000.

To one who has listened to Mr. Hutchinson's masterly exposition of his theory it is difficult to resist the conclusion that his fish theory explains more than any other. Nevertheless one cannot altogether support it. The fact is—while we may admit that fish-eating is a "possible cause" of the disease, we have not, nor has Mr. Hutchinson, the facts to show that this is more than a plausible hypothesis. This theory

cannot be proved nor disproved till we know exactly the share which salted fish takes in native dietary, on this point we expected that Mr. Hutchinson's audience would have been able to enlighten him, but they did not. We need facts not opinions as to the trade in cured fish in India, and these we have not got.

In our February issue (p. 64) we showed that the facts elicited in the census returns did not seem to support Mr. Hutchinson's theory, and to prove his case we should have evidence to show that the use of salted fish is far more common in the districts of Manbhum, Bankura, Burdwan and Birbhum than in the neighbouring districts of the 24-Parganas, Hooghly, Singbhum or Hazaribagh. We know of no evidence to this effect.

In our opinion the contagionists make too much of the spread by contagion theory. The disease is certainly not contagious in the sense that influenza or the exanthemata are contagious, nor is it communicable as typhoid or cholera is. As a disease it has many analogies to tuberculosis, and we still think that it is communicable from the sick to the healthy in somewhat the same manner that tuberculosis is. The period of incubation is certainly very long, the degree of contagion is probably slight, but under certain conditions of close and prolonged contact we believe the disease does spread. The importation of a single or a few lepers into a community will seldom or never be sufficient to spread the disease, but will it be denied that prolonged and intimate contact with a leper as living together, eating together or wearing leper's clothes will not give the disease? This much Mr. Hutchinson admits under the name of "commensal communication." It may be, as he also suggests, that the virus or germ is actually taken into the stomach in the food shared with the leper or from the dishes, etc., handled by the leper. That such a method of spread may well exist is shown by the remarkable investigations of Sticker, who showed that enormous numbers of the bacilli are given out in the secretion of the mucous membrane of the nose.

The difficulty (as in many other diseases), is not as to the seed, but as to the nature of the soil in which that seed grows. What the exact conditions of soil are we know not, but at any rate we know that leprosy usually appears in families and groups of people in communities, and there is nothing more difficult to understand

in the fact that in a family or group one or two individuals may only be attacked and the rest escape, than that in a family one or more may be attacked with tubercle of the lungs and the others escape, though living under identical conditions. The seed may be often present, it will only grow on a suitable and selected soil, and in the case of leprosy the exact conditions of soil are difficult to obtain, hence the slow and erratic progress of the crop

GLEANINGS FROM THE ATTE DELLA SOCIETA PER GLI STUDI DELLA MALARIA, VOL III

COMMUNICATED BY LIEUT COL G M GILES,
IMS (Retd)

THE last volume of proceedings of the above Society, for the opportunity of perusing which I am indebted to Prof Celli, contains much of interest to Anglo-Indians, and in especial two papers—one by Prof Celli, in collaboration with Dr G Gasperini, and the other by Dr H J M Schoo, a Dutch observer, which taken together possibly contain the foundations of most important applications in practical hygiene.

The first-mentioned paper, as also a third contribution, by Dr G Romanin-Jacui deal with instances in which localities remain entirely free from malaria, or practically so, although they apparently present every one of the factors essential to the production of the disease, while other similarly situated localities, it may be close by, are violently infected.

Dr Schoo's paper, on the other hand, deals with the recrudescence of malaria in Holland, a country in which it was believed to be as extinct as is the case in England. It is evident, therefore, that in the English fens and in such places, as Padua, Pisa, &c, some immunising influence must be at work, which may, as has happened in Holland, disappear as inexplicably as it has come.

A hint, however, as to the possible nature of this "x" factor appears to me to be contained in one of Dr Schoo's incidental observations in connection with the reappearance of malaria in Holland.

It may be taken as an undoubted fact that all the conditions known to favour the development of malaria—marshy environment, a favourable climate, and the existence of swarms of *anophe-*

letes,—may be present without giving rise to the development of the disease.

Apart from the carefully described instances in the "proceedings" now under consideration, instances of this sort have been cited by Nuttall (*Journ of Hygiene*, I, 1890), by Seigent (Ann de Pasteur, N 10, October 25, 1901) and by Pfeiffer (Blätter des Allg Argt Vereins, von Thüringen, 1901). The Italian authors especially emphasise the fact that not only are these numerous instances of such immunity to be found in close proximity with existing foci of disease of exceptional violence, but the introduction of infected persons into such immune areas fails to give rise to any notable spreading of the malady, the local mosquitoes being, to all appearance, to a great extent immune to the disease, though this immunity is, in no sense, absolute. They further clearly demonstrate that this apparently inexplicable immunity cannot be referred to any obvious change of local conditions, whether meteorological or hydraulic, and further that the suggestion that they may be due to the more extended use of quinine is in no way tenable. Moreover, some of these very localities are known to have been violently malarious within comparatively recent times. We know, for example, that, after a progressive diminution extending over a couple of centuries, malaria has finally disappeared from England within the memory of middle-aged people, and have been inclined to flatter ourselves with the idea that this benefit may be credited to improved sanitary and social conditions.

It is evident, however, that this explanation does not cover the entire case, as Dr Schoo's paper shows that not only may malaria disappear from a given country, but it may also reappear, without any obvious change of environment, though this is only equivalent to admitting that we have failed to notice some one or more of its details to which such changes must be traceable.

Now Dr Schoo records a fact in his contribution, which may well be, if not the solution of the difficulty, at least a hint as to its nature, and it may be one of its most important factors. His earlier attempts to infect mosquitoes for purposes of experiment failed, and he subsequently discovered that the reason of this lay in the plan he had adopted of feeding them on acid fruits. Mosquitoes so fed could rarely be

infected, while those that were maintained either on pure water or on non-acid fruits, such as the water-melon, could be infected with approximate certainty

It mattered not whether the acid diet was permitted either before or after biting an infected person the result was the same—immunity to infection

Now Prof Celli notes in his description of one of the Italian immune localities that it is remarkable for an enormous development of the cultivation of the tomato, a fruit which is not only very rich in vegetable acids, but is also one of which I know mosquitoes are very fond

He notes also that in these patches of immunity the mosquitoes seemed disinclined to bite. May not the reason of this be found in their being satiated with a food which they prefer?

Again, taking the case of England, let us ask what crop has developed most in cultivation during the two hundred years of progressive diminution of malaria and we shall find that the only staple that has done so is the potato—another plant with a strongly acid fruit, which is actually poisonous to man

Whether or no mosquitoes care to feed on the berries of this plant, I cannot say, but it may well be so

Assuming the accuracy of Schoo's observations it is obvious that the existence of an abundance of readily accessible acid fruit cannot fail to render abortive the infection of large numbers of mosquitoes, and it is not unlikely that one of the factors of the immunity of municipal areas may be the fact that in such situations, mosquitoes are not only the parasites, but the commensals of man, and must needs find the bulk of their food by plundering his laider, which is usually stocked with, *inter alia*, a good supply of acid fruits and beverages. Wine, beer, most fruits, and many of our common culinary vegetables contain an abundance of acid, and it is obvious that insects, able to obtain a free supply of such articles, will not only be less disposed to bite (for I am still strongly of opinion that blood is not exactly the normal food of mosquitoes), but will also escape infection when they do so even where the victim's blood is full of parasites

Now here appears to me a splendid subject of investigation for some of our promising young lieutenants newly joined and luxuriating in the flashness of "unemployed" pay

A series of observations on the immunising effects of various articles of food or of weeds capable of easy cultivation, and especially such as mature during the rains, might be of the greatest value, and provided that Government could be persuaded to so far depart from their usual custom as to leave a few Jail Superintendents for two or three consecutive years in one station, invaluable experiments on the practical prophylaxis of malaria might be made by them, as their opportunities of doing so are unrivalled, though, under our present regime, their opportunities are made absolutely nugatory by the practical certainty of a purposeless transfer long before one can observe the result of any measures taken. Carefully conducted observations on the effects of various food plants in modifying the liability to infection of mosquitoes feeding on them might prove of incalculable value, but such experiments require time and can not be transferred from hand to hand, like an office for the sale of postage stamps, nor can any results be expected by the deputation, for a definitely short period, of one or more officers on emoluments calculated at something practically less than their usual pay.

The discovery of some anopheles-immunising plant capable of growing under the same conditions as irrigated rice, and fruiting at the season during which the rice-fields are kept flooded is also a great desideratum, as the systematic planting of patches of such a plant amongst the rice cultivation would go far to neutralize its deleterious effects on health

All this, if Dr Schoo's observations can be confirmed as, let us hope, it may be, and no other that has yet come to light, appears to offer such large and inexpensive possibilities of prophylaxis on a large and practical scale as this appears to do

Another fact that may be gleaned from the present volume is that, unlike our Indian authorities, the Italians are commencing everywhere to put to the test of practice the lessons taught by science as to the rational prophylaxis of malaria, and, moreover, that wherever this has been done, their efforts have been crowned with a very fair measure of success. In many instances, too, they have demonstrated that much practical good can be effected for but a small expenditure of money, and they emphasise the truth of my contention that the measures adopted must be everywhere based on a careful study of local

conditions In Northern Sicily, *eg* Dis Insinna and Mangilla (Atti, III, p 611, *et seq*) show that the breeding places of the anopheles are there mainly pools in the beds of rivers and torrents, which only contain any considerable volume of water during periods of heavy rain From the nature of the case little can be expected from works of a permanent character, even if the expense of regulating works of this character were not prohibitive, and it was found better to employ only temporary expedients renewed from year to year On page 115, he describes how a considerable suburb of the city of Palermo was dealt with, the malariousness of which was traceable to pools in the bed of the Orete and of those of canals connected with it

Sig Comm Mario Benso, the Engineer of the locality, had the following works carried out —

1st To dig a small ditch about a yard wide carefully levelled throughout the course of the streams lying within the Municipality of Palermo so as to carry off quickly and easily the residual waters and avoid the pools that form in the wide beds of watercourses of this description

2nd To clean out the mud and obstacles of every sort that could retard the passage of the water from the channels of canals and mill-courses

3rd To clear away the algæ and other aquatic plants and their roots

4th. To destroy reeds and other plants growing on the banks, the roots of which extend into the water (so producing small stagnant areas)

5th To maintain a careful watch over any deviation of water from streams, canals, &c, so as to avoid the formation of marshy patches

6th To inspect all stables, &c, within the zone, so that they may be kept in a good sanitary condition

The adoption of these measures has resulted in a notable diminution of malaria within the area involved, and that at a cost of only about £200 per annum, and though they may be of little interest as regards the majority of our towns in the plains, it is obvious that they exactly fit the cases of Huidwar, Kathgodam, and other submontane towns, where malaria of the most virulent type is lamentably prevalent

Another fact worth noting is that the substance known as "larvæcide"—an aniline derivation manufactured by a German firm—has been found practically useful for the destruction of larvæ, while a similar substance "culicide" has been

found to lack sufficient solubility to be of practical use The general impression, however, appears to be that as yet we have nothing that surpasses petroleum for such purposes

The entire volume is, in fact, full of interesting results of sound work, and the fact that so few of us read Italian will, it is hoped, be taken as sufficient justification for the above brief notes on its contents

LONDON LETTER

THE OYSTER SCARE

THE possibility of typhoid fever being communicated by means of oysters and other shellfish taken from sewage contaminated waters was pointed out by Sir Charles Cameron in 1880 Since then, at various times and by various authorities, attention has been directed to the subject, and cases and instances have been reported, which more or less strongly supported Sir Charles Cameron's views Inquiries have been instituted with a view to discovering what measure of danger to public health proceeded from this source, and legislation proposed with the object of removing risks of serious infection Very recently the matter has been forced into unpleasant prominence by events which occurred simultaneously in the towns of Winchester, Southampton and Portsmouth Mayoral banquets were held in these towns on the occasion of the Annual Civil Elections and oysters formed part of these feasts These molluscs were obtained from Emsworth, which is situated on one of the numerous tidal creeks, which scollop the southern coast of Hampshire and which receive the sewage of various towns and hamlets. Waters of this sort are favourable for oyster cultivation, and all round the coast similar estuaries are utilized for this purpose The industry is a large and profitable one In due time cases of typhoid fever began to occur among those who had attended these banquets—many of the sufferers being church dignitaries and men of position Several valuable lives were lost in consequence Investigations at Emsworth revealed indisputable evidence of sewage contamination, and bacteriological examination of the oysters and of the water disclosed the presence of fæcal and even of typhoid bacilli These examinations were extended to other places and other descriptions of shellfish—cockles, mussels and periwinkles—and the re-

sult has been to indicate that the suspicions, which have been mooted from time to time, since the year 1880, are only too well grounded. Of course, the thorough cooking of shellfish obviates the danger of consumption, but even so the idea of eating food taken from diluted sewage is repulsive, and this remark applies obviously to fish as well as to shellfish. The uncooked article is more perilous. The outcome of the agitation has so far been a prohibition of the sale of shellfish from suspicious sources, but action must be taken to prevent the contamination of estuaries by sewage, and the sale of shellfish and perhaps of fish taken from such sources. Legislation will probably be required for these purposes.

SHELLFISH POISONING

The general question of the pathology of shellfish poisoning is an important and interesting one. It has long been known that shellfish of sorts is apt, under circumstances hitherto ill understood, to produce choleraic symptoms. An experience of this kind occurred some years ago in Calcutta. A consignment of oysters was obtained from Bombay by the United Service Club, whose members heartily partook of the delicacy. Most, if not all, of them were attacked with violent vomiting and purging—happily in no case fatal. Was this result due to ptomaines produced by putrefactive micro-organisms or to microbes derived from sewage contamination of the water in which the molluscs were reared? Bacteriological examinations are alone competent to solve this question. As regards India, the shellfish question is not of much concern, because the consumption of the article, raw or cooked, must be very limited. Prawns undoubtedly wallow in filthy water, but the process of cooking must deprive them of danger to the consumer. The general truth that both fish and shellfish must in future be recognised as carriers of infective organisms is one of extreme interest.

THE MECHANICAL DESTRUCTION OF BACILLI

SOME recent experiments have proved that mechanical agitation, even in the mild form of continuous vibration, is destructive to the life of bacilli. It has been assumed, perhaps too hastily, that this fact may offer a solution of the oyster problem—that by agitation of the mollusc in fluid, all bacilli, faecal or specific, may be deprived of life, and that the delicious morsel may still be

consumed raw without apprehension or risk. This remains to be proved by experiment, but the point is a novel and suggestive one.

THE MICROBE OF RHEUMATISM

It has long been suspected that rheumatic fever and its various complications and sequelæ are due to a specific organism. Many researches have been conducted with a view to the discovery of this microbe, and various forms have been described and credited with the causation of the disease. It seems as if at last the suspicion has been converted into reality, and the specific cause of acute rheumatism discovered. The researches of Paine and Paynton in this country and of Fritz Meyer in Germany appear to have confirmed the earlier investigations and experiments of Wassermann and others, and to have shown that acute rheumatism is caused by a diplococcus or streptococcus easily isolated from specific lesions by cultivation in various media and capable of giving rise in rabbits to characteristic inflammatory changes. A very clear, concise and complete statement of the present position of this question will be found in an article contributed by Dr E W Ainley Walker to the February number of the *Practitioner*.

K McL

19th February, 1903

Current Topics.

THE INDIAN MEDICAL GAZETTE

DURING the absence on ten months' furlough, from the middle of April, of Major W J Buchanan, I.M.S., the editorial duties will be carried on by Major D M Moir, I.M.S.

Major Buchanan takes this opportunity of heartily thanking the numerous contributors of the *Gazette* for the aid they have given him during the past four years.

INTESTINAL WORMS IN BENGAL

THE recent publication at the Bengal Secretariat Press of a little book on Intestinal Worms by Major J T Calvert, I.M.S., M.B., D.P.H., the Superintendent of the Cuttack Medical School, serves to call attention to the very great prevalence of all forms of intestinal parasites among the inhabitants of Bengal. Statistics quoted in Major Calvert's book show that out of some three million patients treated in Bengal Dispensaries no less than 174,000 were for worms. These figures, nevertheless, by no means represent the actual number of persons who harbour worms of some sort. Probably 90 per cent of the

inhabitants of several Bengal Districts harbour intestinal worms, but in a large majority of cases these worms do no obvious harm and are either not known or not complained of by their hosts. Major Calvert's little pamphlet is intended for the use of medical subordinates in charge of the numerous hospitals and dispensaries scattered over every district in the Province. If these officers will only take the trouble to carefully read this clear and simply-written book they will be much benefited, and we hope that they will do so, and make use of the small microscopes recently provided. These microscopes are quite good enough for the detection of the ova of worms, and any medical subordinate who follows the directions in this book will have no difficulty in diagnosing the particular variety of parasite present. The illustrations are good and admirably reproduced.

The book before us gives a brief account of all the important intestinal parasites, the symptoms of their presence and the methods of treatment. The most common tapeworm in India is *T. solium*, then *T. mediocanellata*. The *T. Bothriocephalus latus*, though it has been found in Japan, is yet so far unrecorded in India.

Then follow accounts of the round worms, *Ascaris*, *Oxyuris*, *Trichocephalus*, and the *Ankylostoma*. The description of all these is given in simple language. Excellent paragraphs are also given on the microscopical examination of the faeces for ova, and on the search for adult worms.

Major Calvert's work on the prevalence of intestinal parasites among the inhabitants of Bengal is well known to the readers of this *Gazette*, and the making of a book on this subject could not have been placed in more competent hands, and we congratulate him on its success. It has, we understand, been circulated to all hospitals in Bengal, but it has no "note of provinciality" about it, and we would be glad to see it spread to the other provinces of India.

ANKYLOSTOMIASIS IN ENGLAND

THE recent discovery of ankylostomiasis as the cause of anæmia among the workers in the Dolcoath Mine in Cornwall is of interest, as showing that a well-known cause of disease like this can exist in an English mine for eight years without becoming known. It is scarcely to the credit of the medical men in that neighbourhood that the true nature of the complaint was not recognised long ago. Even supposing the country practitioner knew nothing of so-called "tropical" diseases, still he might reasonably be expected to have heard of the "tunnel disease," "miner's anæmia," or "Egyptian chlorosis," under all which titles the form of anæmia due to the ankylostoma parasite has become known at various times and places.

However that may be, the discovery was made at last, and Dr. A. E. Boycott, and Dr. J. S. Halldane, of Oxford, have published (*Journal of Hygiene*, Vol. 3, p. 95) a very valuable account of the affection and outbreak.

The tin mines at Dolcoath consist of a large number of shafts ventilated by so-called "ratnial" means, dependent chiefly upon the higher temperature of the mine at a depth of 2,000 to 3,000 feet. Analysis showed that the air was wonderfully pure and the anæmia was not due to that cause. The high temperature below (*viz.*, 79°F) may be one factor in the spread of the ankylostomiasis. About 700 men work in the mine, which is everywhere damp, "so that much mud adheres to their boots, clothes and hands." They also eat their midday meal or "croust" down below. Strange to say English mines provide no privy accommodation down below, and hence "the ground has been polluted by faecal deposits at many parts"—a condition of affairs resembling an Assam village, but one far from creditable to English sanitation. Ova of ankylostomata have been repeatedly found in the faecal deposit and in the mud, so that the circle is complete.

It is not known how the parasite was first introduced into this mine, but as Cornish miners in charge of mining machinery are constantly going and coming from various tropical countries, it is easily possible to assume the introduction of the parasite from abroad. So long ago as 1898 the anæmia was pretty correctly attributed to faecal pollution by the manager who, by taking certain sanitary precautions, was able to diminish the number of anæmia cases. The authors also hint that it is possible that "some form of immunity to the effects produced by the presence of worms in the intestine may have developed among the miners"—an interesting point which might be further worked out by those well acquainted with the disease in Assam and other parts of India.

It does not appear that there has been any spread of the disease among the people above-ground as in other mines in the neighbourhood.

The symptoms observed have been anæmia, dyspnoea, cedema, gastro-intestinal disturbances, and certain skin affections, furuncles and urticaria. The furuncles vary in size from pinhead pyoderms to boils containing a drachm of pus. In view of the recent experiments of Looss and Bentley this is of interest, but "nothing in the way of larvæ or any other phase in the life-history of the ankylostoma could be identified in the pus." The other skin affection, locally called "bunches," turns out to be a severe kind of urticaria, general pruritus is also often complained of. We see no mention of geophagia, which is a cause as well as a consequence of the disease, otherwise the symptoms are those with which we are familiar, though we do not remember to have seen or heard of

any special skin affections in cases in India or possibly such troubles as boils and blains are not complained of by Indian patients. We especially recommend to our readers the account given by Drs Haldane and Boycott of the changes in the blood. The anæmia of ankylostomiasis differs greatly, they tell us, from anæmia of hæmorrhage or pernicious anæmia, and closely resembles the anæmia of chlorosis. The commonly-accepted explanation that the anæmia is directly due to loss of blood from the punctures of the worms is, however, evidently "incorrect."

The authors then go on to criticise the work of Leonard Rogers, I.M.S., on the blood in this disease. His "figures have been republished more than once and constitute perhaps the best known work on the subject." Our authors point out that the instrument of Gowers, used six years ago by Rogers, is now considered unreliable, and they seem to think that Rogers used too low a standard for the average European resident of Assam in the rainy season (71 per cent), because E. J. Kinann obtained 96 to 100 per cent in Java using a Fleischl hæmoglobinometer.

This portion of the article is too long to abstract satisfactorily, but our authors state that in the series of cases examined by them the "essential alterations consist in an anæmia of severe chloritic type, with a large increase in the total volume of the blood, a varying increase in the leucocytes and a marked relative and absolute increase in the eosinophile cells."

The article is one well worthy of study by medical men in India, where infection by the ankylostoma is very widespread.

FOOD POISONING AND EPIDEMIC DIARRHŒA

That there is an infectious disease affecting a number of persons at the same time, more specially during the hot seasons, the most constant symptom of which is diarrhœa, is a fact which no one will gainsay. This form of epidemic diarrhœa is known by many names, the most common being "English cholera," "Summer Diarrhœa," or "Infantile Diarrhœa." We have also described it elsewhere as "Hot-weather Diarrhœa." It varies much in severity even in the same outbreak, but may often be fatal. In a valuable article (*Journal of Hygiene*, vol 3, No 1, p 68) Professor Sheridan Delèpine, of Owen's College, discusses this diarrhœa and advances a new theory to explain it. Professor Delèpine for many years past has paid great attention to examination of the milk supplied in many cities in England, and has formed a very bad opinion of it. He points out the great resemblance between many outbreaks of food poisoning and epidemic diarrhœa.

We are accustomed to look upon food-poisoning as "ptomaine poisoning" (a name which Delèpine considers to be misleading), or the result of the action of some chemical poison

produced during putrefaction. Epidemics of this kind are usually attributed to milk, which has been exposed to effluvia in ill-ventilated places or which has undergone fermentation, and to tinned meats, pork-pies, ham, game, fish or cheese. Outbreaks of diarrhœa which have been attributed to such causes, are not clinically distinguishable from summer diarrhœa. Dr Delèpine then surmises that "epidemic diarrhœa is generally the result of a more widely disseminated and less massive form of bacterial infection of food than is the case with regard to the more definite outbreaks of food-poisoning." He adds that he has satisfied himself "that the bacilli obtained from noxious articles of food, with few exceptions, belonged to the colon group of bacilli." He then analyses the reports of several outbreaks of diarrhœa, and shows that fæcal pollution was possible and probable in all.

As regards milk, he shows that pollution is everywhere possible, "at the cowshed, either through dirty udders, dirty hands or dirty vessels," and as a result of his many analyses he can state that milk "obtained from vans at railway stations or at the farms is already infectious before it reaches the consumer, and the degree of noxiousness acquired through infection is proportional to the length of time the milk has been kept, and the temperature to which it has been exposed—in hot railway vans, &c."

It is obvious, he says, that long keeping and high temperature are the two most important factors which determine whether a sample of infected milk will contain a sufficient quantity of bacteria to produce infection.

This will explain the epidemic diarrhœa of infants, but that of adults is not so easily explained. But milk is "not the only food which is exposed to fæcal contamination—meat, fish, molluscs, vegetables, fruit, fresh or preserved, are all liable to pollution, specially when prepared for consumption in dirty premises." He then instances the recent well-known case of porkpie poisoning at Derby, where fæcal pollution was not only possible but probable, "owing to the cleaning of apparently diseased bowels in a room where the meat pie was left in uncovered vessels."

Dr Delèpine draws the following general conclusions—

"(1) Epidemic diarrhœa of the common type occurring in England is apparently in the great majority of instances the result of infection of food by bacilli, belonging to the colon group of bacilli, which are present at times in fæcal matter.

"(2) It appears that this infection of food does not generally lead to serious consequences unless the infection is massive from the first, or the food is kept for a sufficient length of time and under conditions of temperature favouring the multiplication of these bacilli.

"(3) Milk which is the most common cause of epidemic diarrhoea in infants is frequently infected at the farm, or (through vessels) in transit

"(4) Other foods than milk are also liable to infection before they reach the consumer

"(5) Of the bacilli of the colon group, which are capable of rendering milk infectious, those which do not produce a large amount of acid, and do not coagulate milk, are the most virulent, and are probably the essential cause of epidemic diarrhoea"

The whole article is well worthy of study. It is obvious that opportunities for faecal pollution of milk and other foods are everywhere present in India, and few of us pass through a hot weather without seeing outbreaks of diarrhoea which, in isolated cases, strongly resemble, and are probably often called, "sporadic" cholera.

INOCULATION AGAINST MALARIA

WE have received a translation of a pamphlet by Dr Philalethes Kuhn, a medical officer of the German troops in S-W Africa, entitled "Inoculation against Malaria"* The pamphlet is interesting reading, but we may say at once that we are far from believing the writer's thesis proved or even probable.

It begins by an interesting account of what is known in S Africa as "Horse Sickness," a very real entity, probably spread from horse to horse by means of a mosquito or other insect. Dr Kuhn then goes on to presume that malaria "like cholera and plague has its origin in a single locality"—a premise which we take the liberty of denying—and that malaria was introduced into S-W Africa "by animals affected with the disease, coming from other countries"—a purely gratuitous assumption, of which he gives no scrap of evidence. Being, moreover, a firm believer in Koch's theory that quinine poisoning is the explanation of blackwater, Dr Kuhn apparently cast about for some substance as efficacious as quinine, but without this alleged drawback. He then points out that horse sickness has many points in common, which he details in most unconvincing parallel columns, of which the following is an example—"Crowded stables protect against horse-sickness," and "houses free from mosquitoes are a protection (sic) against malaria." It appears that clean airy stables are no protection against horse-sickness, but only foul smelling stables, so bad that the fastidious mosquito will not enter them!

Upon these very unsubstantial grounds he proceeds to inform us that among other organisms the *proplasma benignum* is the cause of horse-sickness, and because the totally different parasite is the cause of malaria "the serum obtained in horse-sickness" may be used as a cure for malarial fever. Even the fact that Dr Kuhn

began his inoculations "on the Emperor's Birthday, 27th January 1899" is not in itself convincing, nor can we say that the results detailed in the pamphlet are any more so. Apparently it is assumed that as a result of the inoculation of this horse-serum a reaction takes place and some "protective matter" is formed. Dr Kuhn does not seem to know that many cases of malaria get free of fever of themselves if well fed, clothed and kept in bed, but we see no proof of the efficacy of his serum in the evidence given in this pamphlet.

Indeed, it is a matter of wonder to us that Dr Kuhn would have thought it necessary to have it translated into English and published separately. It strikes us as a good example of faulty reasoning from still more faulty premises.

MALTA FEVER IN THE UNITED STATES

THERE is, perhaps in medical literature, no more curious example of the widespread distribution of a disease long supposed to be local than that of Malta fever.

Malta or Rock fever was an entity well known and recognised by Army and Navy surgeons for many decades past, but to the general bulk of the profession it was entirely unknown, and if they heard it mentioned, physicians at home smiled in a superior fashion and mentally put it down as malaria or the ubiquitous typhoid. It was only after the publication in 1887 by Lieut-Col D Bruce, R.A.M.C., F.R.S., of his discovery of a micrococcus that the medical profession turned to look for this disease.

The prevalence of the disease in all countries bordering on the Mediterranean was long known and recognised though under different names, but it was not till the labours of British Army surgeons had settled the disease as an entity both clinically and bacteriologically that it became generally recognised.

Its existence in India soon was demonstrated at first among British soldiers, then among European officers and ladies in Simla, and lastly among the natives of the Punjab. We need not here refer to Bentley's theory that *kala-azar* is Malta fever—this subject has been fully discussed in our columns, but the extent of the existence of Malta fever among natives of India is very far from known, and we would hesitate to accept conclusions as to its prevalence drawn from serum tests only. We would be much obliged if some of our readers in the Punjab would give us the benefit of their experience of this fever among natives.

Shortly after the army of the United States had settled in the Philippines, news came of the discovery of Malta fever there. It was also found in the West Indies, so that this supposed "local" disease has really an almost world-wide distribution.

Since the Spanish-American war many cases

* London, H. K. Lewis, 1902. Price, 2s.

have been put on record as met with in the United States, but so far we are not aware of any cases which have been found in persons who have never lived out of the States. Cases among soldiers from the Philippines and from Cuba are common enough, and Dr Craig, the Bacteriologist to the U S Army, has put several typical cases on record in the *American Journal of the Medical Sciences* for January 1903 (p 105). We may quote Dr Craig's method of performing the serum test, as a good deal of scepticism exists as to the value of methods in use—

"In performing the serum test for Malta fever I have used practically the same method as that used for making the Widal test. A pure culture of the micrococcus, either upon agar or in bouillon, was used. The test may be performed either with the fresh serum or with a dry drop of blood, the latter being used, preferably, as it is simpler and easier to procure. A drop of blood is secured upon a glass slide and diluted with enough sterilized water to dissolve it. A graduated pipette of very small calibre is used to make the dilution with the micrococcus. Having dissolved the drop of blood, a known portion is taken from it by the pipette and placed upon a clean slide, this is then diluted with a measured quantity of the bouillon culture or with a suspension of the agar culture made with sterilized water. The pipette is so graduated that a dilution can be made from 1 to 10 to 1 150. A cover-glass is then placed over the mixture, and this examined microscopically. In using the agar suspension the drop should first be examined so as to be sure there is no agglutination present before the blood is added. Preferably I have used a dilution of 1 75, although the agglutination reaction has been obtained with dilutions as high as 1 250 immediately. This method is easy of performance—all that is needed being the culture, the special graduated pipette, the cover glass and slides, and the drop of blood. The method was used in all the cases described, and controls with a serum of other diseases—such as typhoid, dysentery, etc.—made at the same time, and it was found perfectly reliable."

Dr Craig concludes his article as follows —

"1 There occurs in the tropics and subtropics a fever which may resemble in its acute stage either typhoid or malaria, and in its chronic stage articular rheumatism, caused by the micrococcus melitensis.

"2 There are no pathognomonic symptoms of Malta fever. The symptoms observed are so inconstant and confusing that no one of them can be said to be typical of the disease.

"3 A differential diagnosis of this fever is almost impossible in the majority of cases without the aid of the microscope and the serum test."

AN AMERICAN EDITOR ON CATARACT IN INDIA

The following appreciative notice of Indian work on cataract appeared in the *Journal of the American Medical Association* for February 5th, 1903 —

"The enormous number of operations done for cataract by the ophthalmic surgeons of India is amazing. In a recent article R H Elliot,* of the Government Ophthalmic Hospital, Madras, reports a series of 500 consecutive operations for primary cataract performed in five months. A little over a year ago several of the great cataract operators of India published articles † on

this subject. At that time T H Pope based his conclusions on the subject of cataract extraction on 5,290 operations between 1896 and 1901, and over 4,000 done before 1896. Mr Henry Smith, of the Jullandar Civil Hospital, reported 1,804 extractions of cataract from June 1, 1899 to May 1, 1900, and 1,610 extractions from May 1, 1900, to April 2, 1901. Mr J Lewtas wrote of 147 extractions during the "past three months." Mr Pank of Jaipur reported 2,414 operations in five years. Mr Collins, the assistant surgeon of the Madras Government Hospital, who helped Mr Elliot in his operations, has seen about 12,000 extractions.

"To make these numbers more appreciable, it is interesting to compare the number of cataract operations done in the largest eye hospital in America. At this hospital,* with its 25,000 to 30,000 new eye patients per year, 180 extractions were done in 1899, 182 in 1900 and 162 in 1901. And it is striking to compare the numbers reported by the Anglo Indian surgeons with those of the greatest cataract operator in America. This surgeon, who began as long ago as 1868, when he reported 200 extractions, speaks, in a private letter, of having done over 4,000 cataract operations, and of his despairing of living long enough to do another 1,000.

"When Mr Smith's report appeared we were, of course, astonished at his statement that he had done 44 extractions on each of two days, and the conclusion seemed fair that a record of 44 operations for cataract in one day would for years remain unbeaten. Mr Elliot has broken this record. On one day he did 53 extractions. This certainly is the record for cataract operations in one day, and will probably stand for a while. On three other occasions Mr Elliot did more than 40 extractions in one morning.

"Noting this immense number of operations, the idea occurs to one's mind that may be the very numbers would make these operators careless. The reading of these articles banishes this idea. For instance, Pope, in his general remarks, gives it as his opinion—after 9,000 operations—that the surgeon should refrain from being in a hurry to publish his views in regard to what he thinks is the best method of operation and as to what are the causes of different complications. The article from Elliot, which, by the way, we imagine may be considered as a report of the latest methods and views from the Government Ophthalmic Hospital, Madras, is full of interest. Of course, anything on cataract coming from the Madras hospital must command attention, a few of the procedures practised by Elliot are particularly worthy of note. That of lacerating the capsule of the lens, as he does it, by means of a Bowman stop needle, before the section is made, appears to have advantages over the method as practised in this country and Europe, of doing the capsulotomy after the section is made. He also calls attention to the value of morphia given hypodermically when the patient is nervous and will not obey.

"As a routine procedure, iridectomy is performed, and at the time of the extraction, in the 500 cases iridectomy was done in 484 of them. He washes out the cortical debris by irrigation, using MacKeown's irrigator, and says he owes a great debt to Professor MacKeown for allowing him to witness his method of using his apparatus. This irrigator, according to Elliot, by removing debris expedites recovery and minimizes the need for subsequent capsulotomy, dispenses with the introduction of instruments into the eye after the escape of the nucleus, and has enabled him to operate fearlessly on a large number of very immature cataracts, in which, without it, he would not have ventured to interfere.

"It would seem that an operation like that of extraction of cataract (we might modify this statement by speaking of the operation in the hands of the average operator) could have been perfected by this time. This has not been done, and argument over different methods

* *The Lancet*, Nov 8 1902, p 1252.

† *Indian Medical Gazette*, June and July 1901.

* New York Eye and Ear Infirmary Reports, 1900, 1901, 1902.

and procedures continues in the highest quarters. In the final adjustment of this operation, we venture the opinion that the methods of the Anglo Indian ophthalmic surgeons will have an important place."

THE ROBERT HARVEY MEMORIAL FUND

WE are able to announce that, by the kindness of Surgeon-General L. Spencer, C.B., and Mr A. S. Harvey, of London, arrangements have been made with a well-known artist, Mr Melton Fisher, of London, to paint two portraits of the late Surgeon-General R. Harvey, I.M.S., C.B. The cost of these two portraits will be not less than £225 delivered in Calcutta. We have now in hand, banked with Messrs Thacker, Spink & Co., the sum of Rs 2,911, so that we now make a further appeal for another Rs 500 to those of our readers who have not yet subscribed. We have informed the artist that this sum will be forthcoming, and we confidently appeal to our readers to make up the balance required. Subscriptions should be sent to *Treasurer, R. Harvey Memorial Fund, c/o Messrs Thacker, Spink & Co., 5, Government Place, Calcutta*.

We may remind our readers that it is proposed to present one of the paintings to the United Service Club, Simla, and the other is to be put up in the Eden Hospital, Calcutta, with which Dr Harvey was so long connected.

WE direct the attention of our readers to the remarkable article communicated by Lieutenant-Colonel G. M. Giles, I.M.S. (*retired*), on some of the yet unsolved problems of malaria.

THE Craggs Prize of £50 will be awarded in October to the past or present student of the London School of Tropical Medicine who has made the most valuable contribution to tropical medicine.

NOTES FROM CONTINENTAL EYE CLINICS NORTH GERMANY

VIII—KIEL

October 21st, 1902—I visited the Augen-klinik of Professor Karl Volchers, which was built on good sound lines about sixteen years ago. There are 5,000—5,500 out-patients yearly, and 64 beds, the average in-patients being 60. The staff consists of a professor, two assistants, and two volunteer assistants. There is a very nice children's ward, but scarlet fever accidentally imported has just been clearing it out.

Volchers (a most interesting and courteous Surgeon) speaks French fluently.

Preparations for major operations—A damp pad of *sublim* Lot Hyd Perchlor is kept on the eye for an hour or more before operation. The conjunctival sac is irrigated on the table with sterilised normal saline solution. All instruments

are boiled after the addition of a pinch of sodium carbonate to the water. During the operation, sterilised salt solution is used for irrigation. The patient's head is enveloped beforehand in a light rubber bathing cap, which prevents the hair from getting in the way. The patient lies on a low couch, and Volchers sits on a chair behind the head.

Cataract—There are 100 operations per annum. The incision varies. If iridectomy is to be done, the puncture and counter-puncture are made in the sclera, and the knife edge comes out in the clear cornea, the motive being to *lessen the depth of iridectomy*. If the simple operation is selected, the incision lies wholly in the limbus.

Volchers almost always performs iridectomy. Occasionally with a deep anterior chamber and other favourable indications, the simple operation is tried, but he finds he cannot exclude prolapse, which he considers a very dangerous complication. He thinks the combined operation the safer one. He bandages both eyes for some days, and then uses Fuch shields for a little time longer.

A fair number of cases of *non fragments in the eye* are met with. Volchers uses Hirschberg's sideroscope, and finds it very satisfactory. He is able to get differential readings with it, which enable him to localise to some extent the position of the body. He then makes an incision over the spot, and introduces Hirschberg's small magnet. Two cases I saw seemed to be doing excellently.

Ulcus serpens is common. Volchers nearly always finds it associated with mischief in the lachrymal sac and ducts. He has tried many methods, and has now settled down to the actual cautery, with which he freely destroys the base and edges of the ulcer; he does not hesitate to repeat the process several times if necessary, and he considers it to be 'the only sound treatment of the affection'. If there is any lachrymal trouble, he extirpates the sac at the same sitting, or within a very few days.

For *Dacruocystitis*, he strongly advocates extirpation, except in the very mildest cases. He shewed me a case in which five years ago a patient with lachrymal obstruction nearly lost one eye from *ulcus serpens*, the sac was extirpated, now the same man has returned for *ulcus serpens* and *dacruocystitis* in the other eye, and again the sac has been extirpated. He argues that such cases show the need for early extirpation of the sac in the labouring classes, who are unable to submit to long treatment, and who are prone to injuries of the eye.

For *Simple Glaucoma* Volchers never operates unless the tension is distinctly +, and for other forms his operation is *iridectomy*.

I also saw him operate for *Anterior Synechia*, he introduced a Graefe's knife into the chamber and cut through the prolapse close to its corneal attachment, to do so, he had to considerably

extend his incision at the point of puncture. He more often makes a linear incision and divides the synechia with de Wecker's scissors.

An ingenious test-type for children substituted common objects for letters.

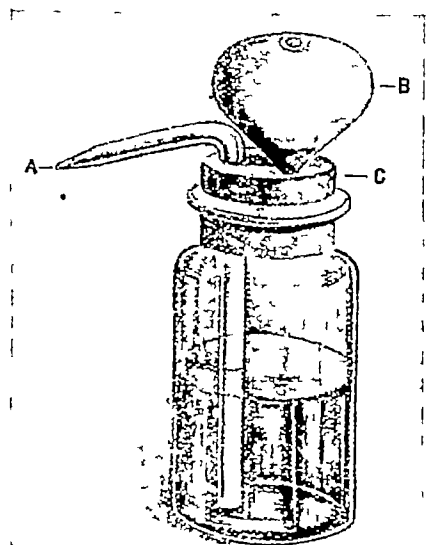
In the first row was a cross, a trumpet and a key, in the second a face, a flag and a knot, and so on.

To examine for small scotomata, Volcheis uses a metal tube six inches long, from each end of which an arm can be protruded by a telescopic arrangement, each arm carries a small diamond-shaped slot with different colours on its two faces, red, green, blue and yellow being selected, against a black cloth a ready and useful examination can be quickly made.

HAMBURG

October 22nd, 1902—I visited the Polyklinik of Professor Heman Wilbrand, and met also Dr. Alfred Saenger. O. P. attendance 5,000 yearly, all in-patients are sent to the Eppendorfer Augenklinik. Formerly it was more, but of late years specialists have been attached to the German Workmen's clubs, and they now get a large number of the cases which formerly came to special hospitals.

A very clean and expeditious method of applying zinc, silver and similar solutions is by using the bottles shown in the drawing.



A—Glass pipette B—Indiarubber bulb
C—Indiarubber cork

The fluid is squirted out by a sharp pressure on the bulb, the bottle being kept at a safe distance, so that no contamination of the pipette can take place.

As everyone will admit Professor Wilbrand to be one of the first authorities in perimetry of the day, his methods are naturally interesting. He works in a special small dull black room, which is practically a cupboard, open only on one side. This side is freely and entirely open to the light of two large windows, so that an even illumination is obtained on the perimeter.

The operator wears a black coat and black gloves, and the test objects are carried on black sticks. These consist of small squares (1 to 10 mm) of white or coloured papers. The arc of the perimeter has a radius of 30 cm and the arm is broad and plain. All measurements are dictated to an assistant, who records them on a chart.

Like Bjerrum, Wilbrand insists on the importance of working with very small test objects, when one desires accurate results.

An entirely novel feature was the 'dark perimetry' room. This is made pitchy dark when observations are being taken. The patient is seated at a table, with his chin on a rest, and looks into a hollow black hemisphere, marked out on the inner side into the usual meridians (of longitude and latitude) which we use in perimetry. The fixation point of this hemisphere is a small square removable object, coated with luminous paint. Pointers carrying similar squares of luminous paint, and of various sizes, serve as the test objects. They are all kept exposed to light until required for use. The operator marks off each meridian in turn with a piece of chalk, and when the light is again admitted, he can construct the chart with ease and celerity.

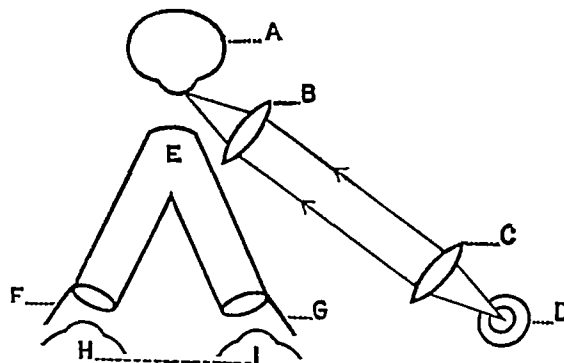
(1) On first entering the dark room, the field of vision is comparatively limited, but after a very short interval it expands, and is decidedly larger than when taken by ordinary methods.

(2) In functional cases not only is the field restricted on the first examination, but it expands *very* slowly indeed. This expansion takes an hour or more, while in a healthy eye or in an organically diseased eye, it takes a comparatively short time (about 10 minutes). This is an important point in the diagnosis of the retraction of the field in hysteria.

(3) In simulated contraction of the field, the patient in the dark room is soon at a loss, and successive measures detect the fraud.

(4) Even in organically diseased conditions, the field is larger by 'dark perimetry' than by the ordinary method, and has apparently been built regardless of expense.

Professor Wilbrand's arrangement of the bi-corneal loupe is shown in the diagram. The source of light is an oil-lamp, and the two lenses



A—Observed eye
B & C—Mounted lens (+10D)
D—Lamp E—Loupe

F & G—Side screens to protect observer's eyes
H & I—Observer's eyes

(each of + 10D) are placed with their principal foci respectively at the source of light and at the eye under examination, they are mounted on stands of suitable height. The patient's chin is steadied by a rest.

October 23rd—I visited the Eppendorf Augen-klinik. This is a separate block of the "Nenes Krankenhaus" of Hamburg. The new and magnificent collection of hospitals known by this name, constitutes a small town in the environs of Hamburg.

The eye hospital is one year old, and has about 140 beds. It is under the care of Professor Schrader during Professor Meyner's absence. The electrical room is a marvel of completeness, being fitted with an universal apparatus for galvanisation, electrolysis, faradisation, galvanocauterisation and endoscopy. This is one of the most perfect equipments of the kind I have seen anywhere in Europe. The 'electrical board' should be of interest to Indian Surgeons. It is supplied complete by Messrs Reiniger, Gibbert and Schall, 12, Buschstrasse, Hamburg, for £32-10, and only requires to be fitted to the electric main of the town, a very simple matter. Less expensive boards are also available.

In the same room is a separate installation for Haab's and Hirschberg's magnets, while in the adjoining operating theatre, the electric current is utilised to drive a fan, to boil the water in the steriliser and to provide a variety of arrangements for illumination. Not the least attractive of the last named is the electric-fore-head-lamp, for dissection operations this is an ideal instrument.

A separate chamber, reserved for the purpose, holds the Azmus' Sideroscope, and from its fittings magnetisable metal has been excluded.

Lastly the dark room for ophthalmoscopy leaves nothing to be desired.

R. H. ELLIOT, FRCS,
Captain, I.M.S.

Review

Practical Details of Cataract Extraction—
By Major H. HERBERT, FRCS, I.M.S. London
BALLIERE, TINDALL, and Cox, 1903.

IN an editorial article which we quote in another column from an American contemporary it was pointed out that it was probable that Anglo-Indian surgeons out of the wealth of their experience would soon lead the profession in the matter of cataract extraction.

The vast and unique experience which many surgeons in India have gained of stone and the operation for its relief have enabled their opinions to be regarded as final in so far as all surgeons are agreed that for the tried and experienced hand the operation of election is certainly litho-

laxy. In cataract extraction we have not yet reached that point, but this is rather because there are many methods of doing cataract which have been attended with equally good results. We believe that there is no one operation which is agreed upon as the best, and the methods of Herbert, Maynard, Pope, Elliot and Henry Smith (to mention only those who have recently written on the subject) are not the same, but we believe all have been followed by equally good results.

It is with special pleasure, therefore, that we introduce to our readers the admirable little handbook on the "*Practical Details of Cataract Extraction*" written by Major H. Herbert, FRCS, I.M.S., for several years past head of the large Ophthalmic Hospital at Bombay, whose name is also well known to all who read the special literature of ophthalmology.

The little book before us differs from all other books which deal with cataract, in that it is largely made up of practical details which are usually omitted from the chapters dealing with the operation in ordinary ophthalmic text-books. Major Herbert tells us that he has attempted to record what he has learnt from the performance of several thousand cataracts and from his teaching in the lecture theatre and hospital during the past seven years. We certainly agree with the author in his modest hope that the accumulation of these facts and experiences will do something to "bridge over the gap between the beginner and the finished operator." We must now briefly give a synopsis of the various chapters in this useful little book. After a preliminary chapter on the stages and varieties of cataracts, and a lucid discussion of the important question as to when progressive cataract is fit for operation or not, in which by-the-by we see it laid down that it is not justifiable to operate on both eyes at the same time, we come to a series of tables on the volume of cataractous lenses, from which we find that the average normal lens in Indians is a "little smaller" than that in Europeans. The next chapter gives a description of the operation, in which the writer discusses the causes of bad results, the preparation of the patient, such preliminaries as the sharpness of the knife, cocaine, instruments, &c. Then comes a detailed description of the initial steps of the operation, the irrigation of the eyeball and eyelids, the question of cutting the eyelashes, the application of the speculum, spasm of the orbicularis, &c., &c. The description which follows of the "combined operation" is admirable in its detail, and seems to us to omit no point of any importance. The operation described is the upward corneal section encroaching very slightly on the sclerotic ($\frac{1}{2}$ millimetre), and including a conjunctival flap 3 or 4 millimetres deep at the summit. Every step of the operation is clearly and minutely explained and every

difficulty foreseen and discussed. We especially recommend a perusal of the sections on loss of vitreous, and the dressing and after-treatment. This chapter is made the more clear by three pages of illustrations showing all the instruments which are or may be used in the operation.

The next chapter is an important one and discusses antiseptics, preliminary iridectomy, the "simple" operation, capsulotomy, over-ripe cataract, &c. Major Herbert does not expect any agreement on the iridectomy or no iridectomy question. That the simple operation is not one for beginners, but that the practised hand inclines to it may be gathered from the following remark: "Those who have once given it a fair trial appear to be attracted by it more and more, without being able to justify their liking on very solid grounds." We regret that stern limitations of space forbid us to dip more into this interesting book. There is much in the sections dealing with other operations, and in the discussion on Henry Smith's operation of extraction within the capsule that we would like to quote from, but we cannot. Chapter IV on "after-complications" is particularly valuable, and so is the next chapter on "complicated and soft cataracts."

We have no hesitation in strongly recommending this thoroughly practical book to all Civil Surgeons, and more especially to the Junior Civil Surgeon. The book contains numerous points which cannot be found in any ordinary text book, and the young operator will find his every difficulty anticipated and will here find the way to avoid them.

We heartily congratulate Major Herbert, I.M.S., on the publication of this most useful and practical book.

Infants and their Ailments in India—By D. SIMPSON, M.D., MAJOR, I.M.S. Calcutta. THACKER, SPINK & Co., 1903.

To the married European in India there are few matters of greater importance than the health of children in India. We do not belong to the class of those writers in London to whom the diseases of the tropics seem so easy of removal, and who from the comfort of the arm-chairs in London write glibly about the colonisation of hot climates by the white race. We do not believe that the time will ever come that the white man's child will be reared up in India in the same health and vigour as he would be brought up in England, nevertheless till the day of parting comes in India when the boy or girl must go home, the preservation of the health of the children through all the trying extremes of Indian heat and Indian cold is a subject never far from the minds of the father and mother in India.

It is for this reason that we welcome the excellent little book recently brought out by Major D. Simpson, M.A., M.D., I.M.S., a Civil Surgeon in Madras, and formerly the Clinical

Assistant at the Great Ormond Street Hospital for Sick Children in London. It is entitled *Infants their Ailments and Management in India*. The little volume before us covers somewhat different ground from the well-known book, by the same publishers, Birch's *Management of Children in India*, which is to be found in every European household in India. Major Simpson's book is concerned with infants rather than children, and in this respect is all the more necessary and valuable. It will be read with interest by medical men, though mainly intended for mothers. The various chapters are as follows:—Personal hygiene of the infant, feeding by the breast, artificial feeding, artificial foods, milk and its preparation, then follow chapters on the chief diseases of infancy, rickets, scurvy, indigestion, teething, diarrhoea, constipation, thrush and other complaints common also among bigger children as measles, whooping-cough, croup, malarial fever, worms, bronchitis, &c.

We call special attention to the useful chapters on artificial feeding, and foods and upon the preparations of milk. Dr. Simpson very sensibly recognises that however desirable it may be to feed a child from "Nature's fount," as Mr. Micawber has said, there are many mothers who cannot and a few who will not do this, hence the vital importance to the child of a clear understanding of what to do and of what not to do. For such these chapters are most useful.

Among the special chapters on the Ailments of Infants we may notice that on diarrhoea, the most frequent ailment of children in India, Dr. Simpson simply divides diarrhoea into two classes: (1) the most common, the diarrhoea from errors of feeding, and (2) the diarrhoea arising from catarrh of the bowel.

We can recommend this chapter to all mothers of children in India.

Upon the whole we have found both pleasure and profit in reading this little book. We recommend it to our readers, who would do no harm by reading it themselves and much good by recommending it to their patients.

Aids to Gynæcology—By A. S. GUBB. 4th Edition. London. Ballière, Tindall and Cox, 1903. Price 2s. 6d., cloth. Pp. 136, illustrations 29. Fcap. 8vo.

THIS little book, belonging to the well-known "Aid Series" produced by Messrs. Ballière, Tindall and Cox, is now in its fourth edition, and Dr. Gubb has taken advantage of this to embody the latest contributions to the knowledge of the diagnosis and treatment of the diseases of women. The text has been almost entirely re-written.

There are, we all know, limits to the use of these "Aids." In our own time we preferred to make our own synopsis, and found such a process most useful as the time approached for examination. As long as they are used as "Aids"

and not as substitutes for more elaborate books, these little booklets are useful. The present one is a very good example of its sort and is replete with compressed information on gynæcology. It can be recommended as an accurate epitome of the signs, symptoms and treatment of the diseases peculiar to women.

Service Notes

THE SERVICES IN 1902.

For the following notes we are, as usual, indebted to Lieutenant-Colonel D G Crawford, I M S —

"As for the last three years the dominating note of our annual summary has been the war, which happily came to an end in 1902, so we may say that the most important event of the past year was the conclusion of peace on 31st May. Not that the British Empire has been at peace ever since. Seldom are the doors of the Temple of Janus shut for any length of time. At the end of the year we had on our hands four separate wars of sorts in three different continents, one expedition on the North West Frontier of India, one in Nigeria, the campaign against the Mad Mullah in Somaliland, and the operations against Venezuela.

The number of deaths in the services has not been large, less indeed than for some years past, and for the first time for four years we have not had to chronicle the death of any medical officer in action. Still, South Africa lost six lives in 1902, those of two officers of the R. A. M. C., one of the auxiliary forces, and three civil surgeons. The most prominent of the retired officers who died during the year was Sir William Guyer Hunter, of the Bombay Service, late M P for Hackney. Retirements, on the other hand, have been numerous, a large number of officers of the R. A. M. C. having quitted the service on the conclusion of the war. Promotions have also been numerous in the R. A. M. C., and several officers have been passed over, chiefly, we believe, because near the age of retirement. In Bengal there have been two promotions to Surgeon General and five to Colonel, seven out of the ten administrative appointments having been filled during the year, although one promotion to each rank was subsequently antedated to 2nd December 1901, the date of Surgeon General Harvey's death. Such a run of promotion has not been known for many a long year, certainly not since the number of administrative appointments was reduced in 1880. In spite of this run, promotion is still much slower in Bengal than in Bombay, where the last officer who attained the rank of Colonel is nearly three years junior to the last officer promoted in Bengal. Madras, on the other hand, is little ahead of Bengal, and no promotion nor death has taken place in Madras during the year. A fair number of Honours fell to the lot of the R. A. M. C. and of the Bengal Service during the year, including what are presumably the last of the South African Honours. Two Victoria Crosses were earned in South Africa by medical officers, both of the auxiliary forces.

The R. A. M. C. are also to be congratulated on the issue of the new warrant, which has given increased pay to many, and has induced brisk competition for vacancies in the corps. In the Indian Medical Service, for the first time for nearly half a century, commissions have been given without competitive examination, four plague medical officers having been granted commissions as Lieutenants. It might have been expected that more plague officers would have been glad to accept commissions, but most of them were too old to make it worth their while to enter at the bottom of the service. The officers thus appointed were allowed to count their previous periods of plague duty as service for pension, but not for promotion, a compromise which seems fair to all concerned.

R A M C

A Deaths

Rank.	Name	Date	REMARKS
Colonel	R C Eaton	15th March	Spezia, Italy
Lt. Col	O G Wood	4th Jan	Kronstadt, S Africa, enteritis
Major	S O Stuart	18th April	Wynburg, S Africa, dysentery
"	D R Hamilton	17th Oct	Wamphray, Dumfriesshire, appendicitis
Captain	E G Forrest	20th Feb	Aden, liver abscess
"	F Dove	18th Oct.	Indore
Lieutenant	G E Leary	14th March	Aden
"	L J S Cahill	14th Sept.	Ahmednagar, enteric
"	T Finucane	4th Dec	Peshawar, enteric
Major	Q K Veitch	2nd Feb	Cape Vol Medl Staff Corps, Cape Town, heart disease

Civil Surgn	P R Fort	10th Feb	Standerton, enteric
"	H J Callum	13th April	Drowned, Modder River
"	Birch	28th May	St. Helena, enteric

B Retirements

Rank.	Name	Date	REMARKS
Surgn Genl	A F Preston	23rd May	
"	T F O'Dwyer	26th Dec 1901	
"	C McDuffie	15th April	
"	H S Muir, C B	1st Feb	
Colonel	J Maturin	6th June	
"	H Comerford	17th May	
"	J H Moore	15th Jan	
"	N B Major	5th Nov	On 1 H P, 6th Nov 1900—4th Jan 1902.
Lt. Colonel	E H Joynt	19th Jan	
"	J Martin	26th June	
"	H Charlesworth	4th Oct.	
"	G H LeMottée	16th April.	
"	E A Mapleton	10th Dec	
"	J L Peyton	15th Oct	
"	R. C Gunning	15th Oct	
"	H H Stokes	13th Sept	Reserve of officers
"	R Drury	3rd May	
"	W H Allen	17th Sept	
"	R O Cusack	16th April	
"	R W E H Nicholson	16th April	
"	A P Hart	6th Dec	
"	O A P Mitchell	19th Nov	
"	J Osburne	11th Jan	
"	J McLaughlin	19th Feb	
"	F. T Wilkinson	4th Oct.	
"	R J L Fayle	29th Oct	
"	J W Jerome		
"	L Haywood	22nd Oct.	
"	A. Asbury	27th Aug	
"	C M W Keys	26th Dec 1901	
Major	R G Kelly	6th Feb	On T H P
"	J I P Doyle	26th Nov	On T H P
"	E H Myles	6th Dec	
"	F J W Stoney	19th May	On T H P
"	J F Burke	29th Oct	
"	O G Woods		
"	J Paterson	26th Sept	
"	M Kelly		
"	J W F Long	5th Oct	On T H P
Captain	F S Brereton	22nd Nov	
"	A C Lupton	5th Sept	On T H P
"	R S Rodger	24th Aug	On T H P
"	G C Phipps	5th Nov	On T H P since 6th July
"	W Jagger	22nd Nov	
Lieut	H Richardson	5th Nov	
"	O Chalks	5th July	On T H P
"	C E Trimb e	23rd Aug	
"	G H Usmar	10th Sept	

C Promotions

Old Rank.	Name	New Rank	Date	REMARKS
Col	W F Barnett	Surgn Gl	1 June 1901	Jameson, R
"	E Townsend	"	25 Sep 1901	Catherwood, D
"	W H Macnamara	"	4 Oct. 1901	Muir, Supy
"	Sir T J Galloway	"	26 Dec 1901	O'Dwyer, R
"	J A Clery	"	23 May 1902	Preston, R
Lt Col	J D Edge	Colonel	1 June 1901	Burnett P
"	R Blood	"	10 Aug 1901	Carew, R
"	J W Barrow	"	25 Sep 1901	Townsend, P
"	W Donovan	"	4 Oct 1901	Macnamara, P
"	R H Quill	"	16 Mar 1902	Eaton, D
"	B M Blennerhassett	"	1 Apl 1902	On augmentation
"	W B Slaughter	"	1 Apl 1902	"
"	W G Pratt	"	1 Apl 1902	"
"	W E Webb	"	23 May 1902	Clery, P
"	C H Swayne	"	1 Nov 1902	Major, R.
Lt. Col	A. Lang Browne	Colonel		
"	P J McQuaid	"		
"	W A Parker	"		
"	H J Robbins	"		
"	H F Hensman	"		
"	F Howard	"		
"	W Johnson	"		
"	M Knox	"		
"	A S K Prescott	"		
Major	C Birt	Bt Lt. Col		
"	M W Russell	"		
"	S Hickson	"		
Surg-Maj	W R Crooke	"		
"	Lawless	Surg Lt Col		
Capt.	D D Shanahan	Bt Maj		
"	A F Tyrrell	"		

For South Africa.

Coldstream Guards

D—HONOURS

Rank	Name	Honour	Date	REMARKS
Dir Genl	W Taylor	K O B	27 June	Retired
Surg Genl	J A Woolfryes	K O B	27 June	Retired
D S G	S B Roe	G S Pension		
Colonel	J D Edge	O B	27 June	
Lt Col	H Charlesworth	C M G	27 June	
"	Sir J A Clark,			
"	Bart	O B	27 June	Retired
"	H J McLaughlin	D S O	27 June	
"	C E Nichol	D S O	27 June	
"	H H Johnston	O B	22 Aug	
"	E. M. Wilson	O B (Civil)	22 Aug	Retired
"	W Johnson	O B (Civil)	22 Aug	
"	W A. May	O B	27 June	
Surg Maj	H Punching	K O M G	27 June	Retired, Egypt tarian Army
Major	W G Macpherson	O M G	27 June	
"	M P C Holt	D S O	22 Aug	
"	W S Beveridge	D S O	22 Aug	
"	H N Thompson	D S O	27 June	
Captain	H E Haymes	Medjidie (4 Cl)	7 Aug	Egyptian Army
"	H N Dunn	Do (3 Cl)	22 Sept.	Do
"	T C Mackenzie	D S O	22 Aug	
Asst.-Surgn	R Bredon	Dbl Dragon of China.		Retired, China customs
Lieutenant	J M Sloan	D S O	28 Jany	For Bakenlagte
Lt Col	R V Kelly	O B	27 June	N S W Medl Corps
"	L Rolleston	D S O	27 June	Imperial Yeo manry
Surg Maj	J A Devine	D S O	22 Aug	Canadian Moun ted Rifles
Surg Capt	T J Crean	V C	11 Feby	1st Imperial Light Horse for Tygerskloot, 18th Decr 1901
"	A M Lenke	V C	13 May	S African Con- stabulary for Vlakfontein, 8th Feb 1902.
Captain	G Leslie	D S O	27 June	Medl offr., Ro berts Horse
Surg Capt	H I Hutchens	D S O	22 Aug	Queensland Con tingent
Civil Surg	W F Tyndal	C M G	22 Aug	
"	E Langley Hunt	C M G	22 Aug	

F—DEATHS OF RETIRED OFFICERS

Rank	Name	Date	REMARKS
Surgn. Genl	W Nash	19 Jan	Pneumonia
"	G Auchinleck	12 July	London
"	W Stewart	23 Aug	Lymington
"	J B Hamilton	25 Oct.	
D S G	T Blatherwick	6 Febr	Bomley, Kent.
"	N Ffolliott	27 June	Muswell Hill
"	J Watts	1 Aug	Norwood
Colonel	S Archer	30 April	Rapallo, Italy
"	R H Carew	24 Sept.	Srinagar
Brig Surgn	J W Hulseberg	4 Feb	London
"	W Macnamara	11 Feb	
"	R W Berkeley	14 May	Fleet, Hants
"	H Lamb	2 Aug	Southampton (Angina)
"	C W Watling	26 Sept	Exmouth
"	B J Jazdowski	23 Nov	Rome
S Lt Col	H C Guinness	2 Jan	Cheltenham
Lt Col	J F Brodie	21 Feb	Maidstone
"	N McCreery	30 Sept.	Newpark, Kilkenny
Surgn Maj	J Parr	9 Feb	Sevenoaks
"	I G Belcher	14 Nov	
Surgn.	P Davidson	5 July	Bridge of Allan
Asst Surgn	A L Marsden	9 July	

I M S

II—BENGAL.

A.—DEATHS

Rank	Name	Date	REMARKS
Lt. Col	E. S. Brander	3 Nov	Shahjahanpur (heart- disease)
"	A. R W Sedgfield	8 Feb	Sanawar (neuritis)
Capt	G Ramsay	24 March	Bagdad (fever)
"	W Carr	6 May	Meerut (explosion)

B—RETIREMENTS

Rank	Name	Date	REMARKS
Surgn Genl	L D Spencer	16 June	
Colonel	G Hutcheson	1 Oct	
"	G M Davis	25 Oct	
"	G C Hall	15 Nov	

B—RETIREMENTS

Rank	Name	Date	REMARKS
Lt. Col	T Young	31 Mar	Extra pension.
"	J Duke	1 Nov	Do
"	E Maur	8 July	Do
"	B Doyle	30 July	
"	O W Owen	15 Mar	
"	D Basu	7 July	
"	J A Neha	4 July	
Captain	W Henvey	4 March	On T H. P

C—PROMOTIONS

Old Rank	Name	New Rank	Date	REMARKS
Colonel	B Franklin	Surgn genl	2 Dec 1901	and Dir genl v Harvey, D
"	A S Reid	Do	16 June	v Spencer, R
Lt. Col	G C Hall	Col	2 Dec 1901	v Franklin, P
"	J McConaghey	"	16 June	v Reid, P
"	H Hamilton	"	1 Oct	v Hutcheson R
"	M D Moriarty	"	25 Oct	v Davis, R
"	B O'Brien	"	1 Nov	v Hall, R

D—HONOURS

Rank	Name	Honour	Date	REMARKS
Surg Genl	A C C deRenzy	K O B	27 June	Retired
"	A S Reid	G S Pension	2 Dec 1901	v Harvey, D
Colonel	J T B Bookey	Do	16 June	v Spencer, R
Lt Col	A Crombie	O B (Civil)	22 Aug	Retired
"	T E L. Bate	O I E	27 June	
"	P F O'Connor	O B	27 June	China
Major	W H W Elliot	D S O	27 June	Lady- smith
Captain	T W A Fullerton	K I H (1 Cl.)	27 June	
"	R H Maddox	K I H (2 Cl.)	27 June	
Asst. Surg	Sir J J T Lawrence	K C V O	9 Nov	Retired

E—DEATH OF RETIRED OFFICERS

Rank	Name	Date	REMARKS
I G	H M Macpherson	4 Jan	London.
Brig Surg	J C Penny	3 April	London
"	E A FitzGerald	9 Mar	London
"	W Moir	10 April	Edinburgh
Surg Lt.			
Colonel	J W Johnston	7 July	Oxton, Cheshire
"	C J McKenna	4 July	Bayonne, France
"	R T Wright	27 August	Bedford
Lieut. Col	D W D Comins	20 June	London.
Surg Maj	F Tarnbull	7 March	London
"	D Wright	15 Jan	Aberdeen

III—MADRAS

A—DEATHS—Nil

B—RETIREMENT

Rank	Name	Date	REMARKS
Lieut. Col	A N Rogers		
"	Harrison	6 Jan	
"	H F Esmonde	28 Dec	
"	White	27 Nov	
"	M E Reporter	2 Nov	
Major	A I O'Hara	23 May	
"	T C Moore		

C—PROMOTIONS—Nil

D—HONOURS

Rank	Name	Honour	Date	REMARKS
Lt. Col	J L Poynder	K, I H, 1st. Cl	27 June	
Major	R Ross	C B	27 June	

E—DEATH OF RETIRED OFFICERS

Rank	Name	Date	REMARKS
Surg Genl	J R Theobalds	7 Mar	Weston.
D S G	R. G Lord	8 July	Torquay
Brig-Surg	R. J Quinell	3 Dec	Melbourne
"	H Cook	- Jan	
Asst-Surg	P W Marriott	1 Feb	

IV—BOMBAY

A—DEATHS—Nil

B—RETIREMENT

Rank	Name	Date	REMARKS
Surg Genl	G Bainbridge	30 Oct	
Lt Col	H P Jervis	27 Nov	

C—PROMOTIONS

Old Rank.	Name	New Rank	Date	REMARKS
Colonel	W McConaghy	Surg Genl	30 Oct	v Bainbridge, R
Lt-Col.	A H C Dane*	Colonel	30 Oct.	v McConaghy, P

*Since dead, 10th January 1903

D—HONOURS

Rank	Name	Honour	Date	REMARKS
S M G P S	Turnbull	K U S	16 Sept	v Guyer, D

E—DEATHS OF RETIRED OFFICER

Rank	Name	Date	REMARKS
Surg Genl	Sir W G Hunter	16 Mar	Anerley, Kent

V—INDIAN MEDICAL SERVICE.

A—DEATHS.

Rank.	Name	Date	REMARKS
Captain	A. A. McArdle	11 Oct	Calcutta (cholera)
Lieut.	G B Butt	28 Aug	Malakund (enteric)
"	E A Loch	9 July	Umballa (enteric)

B—RETIREMENT

Rank	Name	Date	REMARKS
Lieut.	M W Manuk	1 Aug	

C—HONOURS

Rank	Name	Honour	Date	REMARKS
Captain	W H Cox	D S O *	2 Sept	Waziristan

FOR the following two notes we are also indebted to Lt Col Crawford—"The Original Fellows of the College of Surgeons

The *Lancet* of 19th October 1844 (p. 108) gives a list of the Original Fellows of the Royal College of Surgeons, England, appointed in September 1844 by selection from the general body of Members, with the year in which each became a Member. The list contains 227 names, of whom eighteen became Members in the eighteenth century. The two senior Fellows are Caleb Woodyer, of Guildford, and L Leese, of Norwood, both of whom became Members in 1789, while the last, W Hill, of Wootton under Edge, dates his Membership from 1842, only two years earlier than his Fellowship.

Out of the 227 names, 28 are Army Surgeons, including five in the Brigade of Guards, 26 are in the Navy, and no less than 30 in the Indian Medical Service, 17 Bengal, 8 Madras, and 5 Bombay. By far the best known of the Service men is Thomas Spencer Wells, Navy, who had become a member so recently as 1841. Of the Indian names the best known are Simon Nicolson, H H Goodeve, and F J Mouat. Of the whole number, the only name which can compare in celebrity with that of Spencer Wells, is (Sir) William Fergusson.

The following are the names which nowadays seem to be the best known among the men not in the Services:

Sir John Doralt, of Pall Mall, M R C S, 1795
 Sir A Clarke Dublin, M R C S, 1807
 Sir Richard Franklin, Limerick, M R C S, 1822
 Thomas Chavasse, Birmingham, M R C S, 1833
 John Birkett, Broad Street Buildings London, M R C S, 1837
 William Vesalins Pettigrew, Grosvenor Square, M R C S, 1837
 William Bowman, Norfolk Street, M R C S, 1839
 John Simon, Wellington Street, M R C S, 1838
 Joseph Toynebe, Argyll Place M R C S, 1838
 William Fergusson, Dover Street, M R C S, 1840
 George Murray Humphry, Cambridge, M R C S, 1841
 Thomas Wharton Jones, George Street, M R C S, 1841

The following are the names of the men in the I M S, the dates in brackets being those of their entering and leaving the service:

James Melis	Bengal, M R C S,	1802	(18 Sept. 1806—1 April 1845)
Simon Nicolson	" "	"	(2 Feb 1807—1 Aug 1855)
Henry Hough	" "	1808	(3 Apl 1805—24 July 1848)
J Trebeck Conran	Madras,	"	1804
John Marshall	Bengal,	"	1805 (31 March 1805—16 Feb 1845)
James Ranken	" "	1808	(3 Feb 1809—18 Sept. 1845)

William Darby	Bengal, M R C S,	1810	(18 Nov 1813—31 Dec 1849)
William Watson	" "	1812	(11 Aug 1813—10 Aug 1849)
James Lawder	Madras	"	1812
John Wylie	" "	"	1812
Alexander Garden	Bengal	"	1813 (25 Aug 1815—24 April 1845)
Christopher Kane	Bomlay	"	1813
William Jackson	Bengal	"	1814 (8 Nov 1813—1 Aug 1853)
Robert Pinkey	Bombay	"	1814
G Beane Macdonnell	Madras	"	1815
Benjamin Williams	" "	"	1815
James Bird	Bombay	"	1816
George Knox	Madras	"	1816
William Mitchelson	Bengal	"	1817 (31 Jan 1821—1 Jan 1846)
James Hutchinson	" "	"	1818 (6 April 1819—17 July 1845)
C Chandler Egerton	" "	"	1819 (29 June 183—31 Jan 1847)
A Russell Jackson	" "	"	1819 (15 April 1820—26 Jan 1839)
Thomas Lane	Madras	"	1820
Martin Thomas Kays	Bombay	"	1822
William Dollard	Bengal	"	1825 (21 May 1826—4 Oct. 1845)
E. W W Raleigh	" "	"	1825 (15 March 1828—1 June 1846)
Samuel Rogers	Madras	"	1826
Henry Hurry Good eve	Bengal	"	1828 (16 April 1831—9 Sept. 1853)
Frederick John Mouat	" "	"	1838 (3 Jan 1840—3 Dec 1870)
William Jeaffreson	Bombay	"	1839 (" ")

The *Lancet* of 11th March 1843 contains the following amusing account of a difference of opinion in the Bengal Medical Board, extracted "from a Calcutta newspaper." If there is any truth in the story, it was hardly up to date as news, for Dr John Sawers retired from the service on 3rd October 1840, more than two years before the appearance of the article in the *Lancet*. He was succeeded in the post of Physician General and senior member of the Medical Board by Thomas Smith, who in turn retired on 31st December 1842, and was succeeded by Colin Campbell, who held the post till 23rd July 1843, when he also retired. So the Government evidently did not take a very serious view of the "insubordination" of the two junior members.

"Insubordination at the Bengal Medical Board"

"There is a somewhat novel state of things, regarding the members of the Medical Board, at present under the consideration of the higher authorities, and which, immediately relating to the question of military uniform involves the higher one of military authority. We shall relate one of the several accounts (not materially varying) which we believe to be the most correct.

"Not very long since Mr Sawers, the senior member, considered of a sudden that as there was a uniform for the medical staff, that uniform should be worn at all the meetings of the Board, and he mentioned this desire to the other, or junior, members Doctors Campbell and Smith, and said that at the end of a fortnight (allowing that time for the uniforms to be prepared) they should appear accordingly. They, considering this as a proposition rather than as an order, voted against it, and intimated to Mr Sawers that his motion was negatived by the majority.

"He made no remark whatever upon this result, and such meetings as next ensued were attended in the old way—plain cloth coat, or white jacket according to the warm feelings of the respective members—until the first meeting occurred after the expiration of the fortnight's law, when on Dr Campbell's entering the office in a white jacket, Mr Sawers, who was himself in undress uniform, ordered him to go home and consider himself in arrest for disobedience of orders. Home he went, accordingly, and there he has remained ever since, and charges have been sent against him by Mr Sawers grounded on his recusancy. These charges are before Government and the Commander in Chief, and we understand it is not found an easy matter to decide how they should be dealt with."

The following is an official list of the candidates for His Majesty's Indian Medical Service who were successful at the competitive examination held in London on the 13th January, 1903, and following days, arranged in order of merit—

C S Parker, M B (Lond) M R C S, L.R.C.P	3413
F N White, M B (Lond) M R C S, L.R.O.P	3063
T C Rutherford, M B, B S (Durham) M R C S, L R O P	3037

D Heron, M B., B ch (Edin)	3018
L Reynolds, B ch (Camb), M R C S, L R C P	2987
H H Broome, M B, B ch (Edin)	2940
C G Seymour, M R C S, L R C P	2930
E C Taylor, M B, B ch (Camb)	2890
D P Gail, M B, B ch (Edin)	2865
H C Keates, M B, B S (Lond)	2860
R N Needham, M B, B S (Vict.), M R C S, L R C P	2827
J Kirkwood, M B, B ch (Edin)	2812
A Whitmore, M B, B ch (Camb)	2782

The following is a list in order of merit of successful candidates for commissions in the Royal Army Medical Corps at the recent examination held in London

Names	Marks	Names	Marks
J G Bell	619	C Bramhall	484
M G Winder	576	T E. Harty	477
F W W Dawson	548	H H Swanzy	474
I M M Crawford	528	K C Edwards	473
R M Ranking	522	J M Duguid	468
T S Coates	517	H B Kelly	468
A E. B Wood	516	G H J Brown	461
R H Bridges	503	E M Pennfather	451
J Gatt	502	H W V Dunbar	439
J C G Carmichael	511	J S Skey	437
F C Lambert	500	H T Stack	432
I B Mc'don	490	D G Carmichael	428
R C Wilmot	489	D Ahern	428
C W Holden	487	B G Patch	425
J A W Webster	487	G W G Hughes	410

As the examinations for the two Services are now on quite different lines it is not now possible to compare or contrast the above two lists, but rumours have been current that the number of candidates for the R A M C at the last examination was not great, and the competition of the slightest description.

We may notice that in the above list there is only a single man without an University degree, which possibly points only to the fact that the College diplomas have not nowadays the market value they once had, and Universities (of sorts) have become many.

The presentation of prizes to the lieutenants on probation of the Indian Medical Service who were successful at the Netley examination took place at the Royal Victoria Hospital, Netley, on Saturday Surgeon General Sir William Hooper attended to make the presentation, and there were also present Surgeon General E Townsend, C B, Colonel Cayley, Colonel McLeod, Colonel Stevenson, Prof Wright, Lieut. Colonels Dick, Sylvester, Treherne and Chester, Miss Cole, Superintendent of the Nursing Staff, and others.

The following is the list of lieutenants on probation who were successful at the examination. The prizes are awarded for marks gained in the special subjects taught, at the Medical Staff College —

* 1 Mackie, F P	1,431	15 Kiddle, H H	1,115
2 Pridham, A T	1,264	16 Sangol, R D	1,077
3 O Leary, J	1,241	17 Melhuish, H M H	1,057
4 Young, T C M	1,220	18 Brown, H V	1,051
5 Laudie, A K.	1,214	19 Brown, H C	1,037
** 6 Christophers, S R	1,207	20 Collinson, W J	1,023
7 Dunn, C L	1,199	21 Pilkington, A F	1,013
8 Easton P G	1,153	22 Nesfield, V B	1,003
9 Murray, J H	1,180	23 Joudwine, W W	968
10 Emslie Smith, H	1,177	24 Rogers, F C	963
+ 11 Jolly, G A.	1,172	25 Baket, M	937
12 Vieyra, F P	1,159	26 Buluel, C E	901
13 Talbot, R F C	1,129	27 Hingston, C A F	882
14 Dutton, H R.	1,125	28. Humphreys, G F	843
		29 Lunham, J L	800

* Gained the 1st Montefiore Prize of 20 guineas and medal

+ Gained the 2nd Montefiore Prize

† Gained the Martin Memorial Medal.

** Gained the Maclean Prize for clinical and ward work

Sir William Hooper, having presented the prizes, said it was particularly gratifying to him to present the prizes, for in July last, when Earl Roberts made the distribution, it was feared that there would be no subsequent distribution at Netley, and that the War Office might even close the school in which under Parkes, Longmore, Maclean, Arlton, De Chaumont, Boyes Smith, and more recently under Colonels Cayley, Notter and Bruce, and McLeod, Stevenson, and Professor Wright, a long list of men of both Services had received most valuable instruction. They all regretted that Professor Wright had severed his connection with the Medical Staff School. Professor Wright was a teacher of great ability, and possessed the gift of imparting to his hearers some of his own zeal and love for science. Under him many members of both Services qualified for the valuable work they had since done. They all felt thankful that Colonel Stevenson's transfer to the Medical Staff College would not entail a loss to the successful candidates for the Indian Medical Service, for he would instruct both the junior

and senior classes at the college, so that his valuable teaching and the influence he had so long and beneficially exercised at Netley would still be exerted for the good of both Services. They were also very fortunate in having Professor McLeod, who was a tower of strength to the school to which he gave the benefit of his great teaching ability and long experience. In the circumstances they had much to be thankful for, and especially that the Advisory Board for Army Medical Services had undertaken the supervision of the course of instruction carried out at Netley, and they might hope that the school would remain available or lieutenants of the Indian Medical Service until a similar course could be provided elsewhere. Those interested in the Medical Service considered it essential that the men who would proceed from Netley straight to service in India should have the benefit of clinical instruction under skilled guidance in the great Netley Hospital directly after the laboratory course, whilst methods and processes were fresh in the mind, for greater facilities and more clinical material in tropical disease were available at Netley than elsewhere in the United Kingdom. Professor McLeod had presented a most gratifying report on the work of the class during the course now ended, and he heartily congratulated both the Professor and the class on the report. One great advantage of the Indian Medical Service was that a man could obtain employment in the particular branch for which he was best fitted. A great additional inducement was now offered to highly trained men to enter the Service, for the Government of India was organising a research department in which some of their predecessors in that excellent school who worked there under Professor Wright, were now engaged. India presented an immense field for investigation into the great problems of tropical disease, and the opportunities for their solution might be given to some of them, whilst zealous and industrious officers would find full scope for their energies in every branch of medicine and surgery, as well as the sanitary work, and in teaching institutions throughout India. All interested in the Indian Medical Service would feel thankful that this excellent school still survived. His own interest in it had increased with his knowledge of its advantages and potentialities for valuable instruction to officers who would serve in the tropics, and he inherited that interest in the school from his distinguished predecessor in office, Sir Joseph Fayer, who had always been a staunch supporter of Netley, and to whom it was an open secret they owed it that the school was not years ago swept away under a misdirected demand for economy. Sir William, in conclusion, wished them all possible success in the noble profession they had adopted, and remarked that whatever might be the measure of that success, they would each and all have the great privilege of mitigating something of the great sum of human suffering.

OWING to the death of Captain A. McArdle, I M S, Mr E P Stebbing, Deputy Conservator of Forests, is appointed to act as Superintendent Indian Museum, till the return from furlough of Major Alcock, I M S, F R S.

CAPTAIN T H KELLY, I M S, Resident Surgeon and Professor of Physiology in the Calcutta Medical College, reverts to Military employ.

CAPTAIN J C H LEICESTER, I M S, is appointed Resident Medical Officer in Calcutta Medical College, vice Captain Clemensha I M S, who is Deputy Sanitary Commissioner.

It is a great pity that most of these Medical College Resident appointments are so wretchedly paid. The appointments are invaluable for men who want to brush up their work again, but men cannot be expected to remain long on lower grades of pay than they would get as Civil Surgeons in the Mofussil.

CAPTAIN LEONARD ROGERS, M D, F R C S, I M S, has gone on nine months furlough.

LIEUTENANT COLONEL WILLIAM OWEN, M D, F R C S, I M S, for many years Superintendent of the Opium Factory at Patna, retired from the service from 24th March 1903.

Lieutenant Colonel Owen entered the service in March 1877, and has been Head of the Opium Factory at Patna since 1889. He went home on leave in July last.

COLONEL J P GREANY, M D, I M S, is appointed P M O, Sind District, vice Colonel A. H C Dane, deceased. Colonel Greany will, however, continue to officiate as P M O at Aden until the return from S Africa of Colonel J S Wilkins, I M S, D S O, and Lieutenant-Colonel J McCloghry, I M S, will officiate as P M O in Sind.

WE republish the following —

"ARMY BEARER CORPS — The attention of all medical officers is invited to the fact that the bearer establishment of the Supply and Transport Corps has now been taken over by the Army Bearer Corps (Clause 93, India Army Circulars, dated 1st October 1902). All requisitions for dooly bearers required to accompany troops on the line of march, etc., should be

sent as early as possible by medical officers in charge direct to the Assistant Surgeon commanding the company concerned, and should not be included in Indents submitted to the Supply and Transport Corps "

It is a pity that recruiting for this Corps is going on so slowly

WE are informed that Rs 2,795 have been subscribed by I N S men in Civil employ for the "Y" fund—a very handsome contribution

CAPTAIN P K CHITALE, I M S, has been appointed Officiating Civil Surgeon of Seoni

MAJOR H HERBERT FROS, I M S, is granted 18 months combined leave from 18th April 1903

CAPTAIN R. W ANTHONY, M B, I M S, is appointed Civil Surgeon, Panch Mahals

CAPTAIN C H S LINCOLN, I M S, acts as Civil Surgeon of Karwar vice Dr H Cogill

It has again been recently ruled that the Sanitary Commissioner, Madras, is debarred from private practice

THE services of Captain P St C Vore M B, I M S, are placed permanently at the disposal of the Punjab, and those of Captain R W Anthony, M B, I M S, at the disposal of the Government of Bombay

It is well known that Captain B H Deane, I M S, was appointed Sanitary Commissioner of Bengal, during his absence on leave in Australia, and against his wish. On return from leave he protested against being taken away from the general line and with the effect that he reverts as Civil Surgeon and Major F C Clarkson, I M S, is appointed Sanitary Commissioner in his place

There was a time when this appointment was an independent one and much sought after

THE services of the following officers are placed permanently at the disposal of the Government of Burma—Captain C E Williams, I M S, and Captain F A L Hammond, I M S

THE services of Major E H Wright, I M S, are placed at the disposal of the Madras Government

THE retirements of the following I M S officers are from the dates herewith given—Colonel Geoffrey Hall from 1st November 1902, Lieutenant-Colonel Joshua Duke from 1st November 1902, Lieutenant-Colonel W E Griffiths from 6th January 1903, Lieutenant-Colonel H F L P F Esmonde-White from 28th December 1902, Surgeon General G Bainbridge from 30th October 1902, and Lieutenant-Colonel H P Jervis from 27th November 1902

LIEUTENANT A. C MACGILCHRIST, I M S, is appointed Surgeon Naturalist to the Indian Marine Survey from 17th January 1903, vice Captain A F McArdle, I M S, deceased

MAJOR ANDREW BUCHANAN, I M S, is deputed upon special duty, and Captain S A C Dallas, I M S, is appointed to act Civil Surgeon of Nimar, C P

MAJOR B L BASU, I M S, is appointed to the officiating medical charge of 2nd Rajputs, and Lieutenant L Cook, I M S, to that of 11th Rajputs

MAJOR SYED HUSSAIN, I M S (ret'd), or, as he is now known, Syed Hussain Belgrami made a good speech on Mahomedan education at a meeting in London recently

THE following movements of Civil Surgeons in Bengal have recently taken place—Lieutenant-Colonel R Macrae, I M S, goes to Hazaribagh. Captain R Bird, I M S, returns to 24 Perganas, Dr J L Hendley acts as Health Officer of the Port of Calcutta, Dr A. W Reid goes from Puri to Jessore, Captain Clayton Lane from Chapra to Puri, Captain C R Stevens goes from Midnapore to Mozufferpore, Captain Cochrane from Mozufferpore to Chapra, and Captain D R Green from Hazaribagh to Midnapore

THE appointment of Captain Armstrong, I M S, as Surgeon to H E. the Viceroy, leaves a vacancy in the Foreign Department for a Madras man, and Captain W Lethbridge, I M S, has been appointed

THE Central Jail at Jubbulpore, C P, has been very unhealthy for several years past, and it has been found necessary to send an experienced Medical Officer as Superintendent, and Major W B Lane, I M S, from Montgomery Central Jail has been chosen.

CAPTAIN H J WALTON I M S, has been appointed Officiating Civil Surgeon of Bulandshahr

MILITARY ASST SURGEON L. J O'REILLY, I M S, goes as Civil Medical Officer to Jalaun

CAPTAIN HUNTER, I M S, becomes Medical Officer, 3rd Brahmins, at Ranchi

THE services of Captain J M Woolley, I M S, are placed permanently at the disposal of the Bengal Government for employment in the Jail Department. He is now Superintendent of the Bhagal pore Central Jail

MAJOR J C S VAUGHAN, M B I M S, is granted combined leave for 21 months from 7th April

It is understood that Captain B C Oldham, I M S, will act as Superintendent, Campbell Medical School, Sealdah, and Police Surgeon, Calcutta, during the absence of Major Vaughan on leave

THE leave granted to Captain C D Dawes, I M S, was extended up to 22nd November 1902

HONORARY CAPTAIN W COOPER is permitted to retire

THE services of Major F Wyville Thompson, M B, I M S, are placed at the disposal of the Commander in Chief

MAJOR W VOST, I M S, Civil Surgeon of Jaunpur, U P, was recently granted one month's privilege leave, and Civil Asst. Surgeon Abdur Rahman performs his duties

LIEUTENANT COLONEL A W F STREET, I M S, D S O, has been permitted to return to duty in India

CAPTAIN C H S LINCOLN, I M S, has been appointed Civil Surgeon of Karwar

THE services of Major P W O'Gorman, I M S, M D, D Ph, are again replaced at the disposal of the Home Department for the post of Medical Store Keeper, Punjab Command

LIEUTENANT O S F J MOSES, I M S, is appointed to the officiating medical charge of 3rd Brahmins, Lieutenant G E. Charles I M S, to that of 17th Rajputs, Lieutenant L B Scott, I M S, to that of Bengal Sappers and Miners, and Lieutenant C A Sprawson, I M S, to that of 2-39th Garhwahs.

Now that all ranks of the R A M C are getting increased pay, I M S men are constantly asking what is being done for them

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R Crocker's Diseases of Skin (4th Ed.)
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Original Articles.

SOME EMERGENCY RATIONS

BY CUTHBERT A. SPRAWSON,

M.D. (LOND.), B.S., I.M.S.

ONE of the features of modern war is the length of time that large bodies of troops may have to act before being able to replenish their supplies. This was seen in South Africa when in many of the commando hunts, troops moved for a month, sometimes for three months or more, without meeting fresh supplies, whilst the one week's "dau" is now a prominent feature of Indian Frontier warfare.

When here we speak of emergency rations therefore we mean not so much the compressed food ration, which may keep a man going for a day or so, though this rightly, too, has its place in every man's haversack, as that collection of foods that an army cut off from all fresh supplies may conveniently carry along with it and live on. We say 'collection of foods' because we think that variety is one of the most important points in such cases. Our food in fact must be—

- A—In variety
- B—Easily portable
- C—A good food

A—The importance of variety is evident to those who have tried living on one diet for long. However appetising a food may be at first, the liking for it flags until the stage of nausea at the very sight of the article is reached. This state is more rapidly reached when the food has any pronounced flavour. So that it is doubtful if we can call any one ration perfect. We must rather look to a combination of rations.

B—No tinned or preserved food, however well made, can compare with fresh meat and vegetables, but that is not the point of our present discussion. As we have said, we refer to times when fresh supplies are unobtainable, and the food must be carried, so that smallness of bulk and portability are important, since by lessening the bulk we keep down the number of our baggage animals, and by therefore having to carry rations for fewer animals indirectly still further reduce this number.

C—The tests of a good food are—

1 *Chemical*—By analysis for the percentage of each nutritive constituent.

2 *Physical*—By combustion. How much potential energy will it yield?

3 *Physiological*—How does it behave in stomach and intestines? Is it easily digested, and how much is absorbed? What is its satisfying power?

4 *Economic*—*i.e.*, the nutritive worth one gets for one's money in that particular food.

Or in the words of Dr Hutchison¹ a good food must be —

- I—Nutritious
- II—Easily digestible
- III—Cheap

I—Referring to the nutritive qualities of a food, we give some examples of recognised standard diets (in grammes) for men during hard work.

	Labourers at work ¹	Royal En- gineers at work during peace ²	German army on war footing ¹
Proteids ...	125	140	134
Fat	50	80	58
Carbohydrates	500	620	489

I—These approximate fairly closely to the diets of Molescott and of Ranke as given in Professor Halliburton's book³.

II—*Apropos* of the digestibility of food, as we are usually unable to ascertain its exact behaviour in the stomach and intestines, we are reduced to experiments *in vitro* with gastric and pancreatic juices for determining the questions asked above under our physiological tests.

We have then, on the whole, two distinct methods of constructing a dietary.

A—The *Physiological*, *i.e.*, by calculation of the above data and comparison of the results with those of a normal diet.

B—The *Empirical*, *i.e.*, by feeding men on our trial diet and seeing what work they can do.

The ideal thing would be to use both these methods in determining the efficiency of a ration, but where opportunity does not allow of both, the more important of the two is the practical method of trying to live and work on the ration in question. We give below a short account of our own experience of some rations with notes, where available, of their chemical constituents and physiological value.

1 *Macdonald's*, *Morrison's* and other similar meat rations are well known. They consist of meat and vegetables and are very savoury, the flavour we think in fact too pronounced, because, although most agreeable at first, after the third or fourth day it becomes monotonous, and in spite of the fact that the ration may be served in a variety of ways, one's appetite for it gradually diminishes, and a change is longed for. They are besides somewhat bulky.

2 *The Nao Company's* ration is said to be made of compressed beef. It resembles a sausage meat and is agreeable and quite satisfying. A good point is that it is preferable when eaten cold.

3 *Biltong* as a ration has been dealt with recently from the physiological side by Professor Halliburton,⁴ and practically many times in

South Africa It is the meat of the buck, sun-dried, and is usually eaten after being grated. The constituents per cent are—

Proteid	65.8
Fat	5.1
Carbohydrate	19

It is easily digestible *in vitro* with gastric and pancreatic juices and leaves a convenient amount of undigested residue. Experience has shown it to be a good ration in the field. None of the above foods are complete in themselves as a ration; they are all deficient in carbohydrates, the biltong especially so, besides containing too little fat. With all therefore bread or biscuits are required in addition, and with the two latter butter as well.

4 The *Bovril* Company, however, produce rations which are intended to be complete in themselves. They are in three varieties, not counting a ration of compressed bacon; they also make. Each kind is contained in a tin, called a cartridge, about the size of a $\frac{1}{2}$ lb tobacco tin, but more conveniently shaped to carry in the haversack. Each tin is in two divisions, one division in each kind containing chocolate, the other division contains a granulated meat ration. In two of the kinds the difference is merely one of flavour and the complete cartridge together with one pound of bread or biscuits is supposed to sustain a man at work for a day. We have tried them, and they do so with ease and comfort. Any of these rations may be eaten as they are, but are much preferable made into a thick soup. The third kind is called an emergency ration and is said to be sufficient by itself as food for one man for 36 hours. We tried these also for 36 hours, eating the granulated meat and chocolate as they were and without drinking at all; the cartridge satisfied hunger and sustained activity, but we should imagine that more than 36 hours on this food alone would be unpleasant. The flavour at first agreeable becomes so monotonous after one day as to make the food uninviting and the appetite anything but keen.

The digestibility of this ration practically seems good, we have had no opportunity of experimenting on it *in vitro*. The percentage composition is said to be—

Proteid	27.79
Fat	23.1
Carbohydrate	11.37

and a large amount of extractives.

As this compares with our physiological diets above the carbohydrates are much too few, but this is compensated by the chocolate section, so that the ration may be said to be a complete one. We discuss chocolate below the meat section; we think very good and to be relied upon for its intended purpose. The *Bovril* Company were kind enough to let us see the manufacture of these interesting rations; the preparation is simple and clean and on good

physiological principles; this seems the most energetic attempt of any commercial company to make a good emergency ration.

5 *Sugar* is an excellent food for work, exerting its maximum effect in staving off fatigue two hours after consumption. Exhaustive experiments were made some five years ago in the German army on sugar as a ration during manoeuvres. The army surgeons found that less fatigue was felt by the soldier after hard work by the addition of ten lumps of sugar to his full diet; they completed their report by the recommendation to raise the sugar ration of the men to 60 grammes (2.1 ounces) per diem.¹ The popularity of jam on service depends on the contained sugar; we have heard that it was found advisable to increase the jam ration in South Africa. The "goo" of the Indian Commissariat is a most valuable article, from it a good treacle may be made, or a very useful hardbake, which may be carried in the haversack, by the addition of a little *ghu* and some parched gram, assuming the usual butter and almonds to be unobtainable. Other sweetmeats will suggest themselves to an ingenious cook.

The form of sugar commonly employed is also the sweetest, cane-sugar; the objection to this is that it causes much outpouring of mucus in the stomach and interferes with digestion. Invert sugar, as glucose, is much more easily digestible and in quantity less clogging to the taste. It is in fact somewhat tasteless and would therefore be conveniently flavoured with coffee or chocolate. Such an article would, we think, form part of a palatable, cheap and efficient ration.

6 *Chocolate* by itself has long occupied a favourite position as an emergency ration. Every officer carries some in his haversack, and with some European armies it is the mainstay when the Commissariat fails them. We think its position undeservedly high for the following reasons. Ordinary chocolate consists of 45 per cent cane-sugar, the rest being cocoa, *i.e.*, the ground bean. Cocoa theoretically is an excellent food, because of the proportion of its constituents and their digestibility; practically, however, it fails, because so little of it can be taken. To live exclusively on cocoa, it would be necessary to consume about eighty good breakfast cups a day. We have had practical experience of chocolate as a food in Arctic seas and on Indian Frontier service, and are inclined to attribute its popularity to its pleasant flavour and its power of satisfying at the time, the latter due perhaps to the contained sugar and theobromine. But since its flavour is so pleasant, we suggest its more extensive use as a flavouring agent to other foods such as the glucose mentioned above. Without sugar, however, cocoa is not so attractive, and we consider that the Commissariat makes a mistake in issuing its cocoa almost unsweetened.

both from the point of view of flavour and its utility as a ration

7 *Fish*, either tinned or dried, may be used as an occasional ration. The objections to it are that alone fish does not contain enough fat, that it also contains proportionately less proteid and fewer extractives than meat, and so is more bulky to carry, and lastly, it is more likely to cause acute intestinal disturbances from decomposition products

8 *Vegetables dried and compressed* have been prepared for consumption by troops on service. We have met with those supplied by the Indian Commissariat recently for trial, including onions, carrots and potatoes. Only the last-named were eatable, the others were tasteless and seemingly indigestible. We should imagine that better preparations can be made

9 *Fruits and nuts* are worth a more extensive trial as accessories to rations. Dried fruits of several kinds, as apricots, dates and figs, may be obtained, if previously stoned they take up little room and are very palatable when stewed. Of nuts the most useful are almonds, walnuts and chestnuts, and, although it is not a nut, we should here include the gram that is so popular with native troops. Walnuts and almonds even more so are particularly rich in fat. Thirty walnuts contain the same quantity of fat as 2½ lbs of beef, but of proteid only as 2½ ounces of beef¹

Chestnuts well cooked are a particularly useful food, leaving a convenient amount of undigested residue to relieve constipation

10 *The cereal foods*—Oatmeal is well known as a valuable article of diet and has been much tried during hard work⁵. Dr. Alexander Haig goes so far as to say⁶ that "meat-eaters require food more frequently than purely cereal eaters" but most will object to this statement. We think the lesser frequency of meal times among the cereal eaters of India is attributable to other causes. It is certainly not the experience of those who have dined at a vegetarian restaurant. Bread and biscuits are too well known to need further comment, where the former is unobtainable, the latter are almost indispensable and may be eaten dry or soaked in soup

All of the foods mentioned above satisfy requirements as to smallness of bulk for portability, and as to cheapness, without which no food however tasty, digestible and nutritious, could be a serviceable army ration

We have dealt only with foods and not touched on the stimulants as rum, tea and the meat extracts, though there is much to be said concerning these. From lack of opportunity we have been unable to test the digestibility *in vitro* of the above foods. This test is important particularly in determining the amount of undigested residue that is left from any one article. Some residue should certainly remain,

or constipation will be absolute and a rabbit fed on an all absorbable diet soon dies. Whilst more than 13 per cent of the total should not be left, or the food may be called indigestible

It should be remembered also that climate exerts but little influence on the kind of food required, since we usually regulate our bodily temperature by controlling our loss of heat only, *i.e.*, by the amount of clothes we wear. It is only in extreme cold that clothes are not enough, then we require the food of greatest caloric power, which is fat and so the Esquimaux eat blubber

In conclusion, we repeat that no one food is sufficient by itself, and we think that the most important point of all is variety in the food. However good theoretically a food may be, and however chemically complete in itself, the appetite for it will lessen, unless a variety of other foods is called in to assist. We should choose therefore a selection of the above to take out on our "dani," not giving, if possible, the same article on two successive days, and supplementing our daily *pièce de résistance* by accessories, such as nuts, &c. We think by such means life on service can be made more bearable, and the efficiency of the troops greater at no increased cost. To apply such deductions to our native soldiers is more difficult. Many of the articles, as nuts and fruits, they may have, and it is not impossible that to some even prepared rations may be acceptable if compounded by a man of convenient caste. But this article is primarily intended to apply to British troops. There is room, however, for much difference of opinion on these questions, and we should like to hear the ideas and experiences of other medical officers on the subject of army rations

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UNACUSTOMED PLENTY AND PREVALENCE OF BOWEL COMPLAINTS IN THE BENGAL JAILS

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THE prevalence of bowel-complaints in the Bengal jails is a subject which has occupied the attention and exercised the intellects of many medical officers and superintendents, but is nevertheless a question which remains still unsolved, and the number of individuals who fall victims to this cause year after year in our jails is by no means inconsiderable, and "jail dysentery" has almost come to be regarded as a

special and a particular form of the disease, of which the etiology is obscure and prevention hopeless. As far back as 1892 when I first held charge of a jail in Bengal, this question has interested me, and I have, in my humble way, in spite of the fact that many abler minds than mine have grappled with the subject without having arrived at any satisfactory conclusion, made little experiments from time to time and formed a theory, but as all my former jail charges were of a temporary nature, I did not get an opportunity to put my theory to test as fully as I wished to do. In September 1901, I was appointed to the permanent charge of the Daltonganj Jail. This suited my purpose completely. This jail, from the very beginning of its existence as a District Jail, in 1892, has enjoyed an unenviable reputation for unhealthiness, its mortality rate although showing extraordinary fluctuation from year to year, having never come to the point to which it has come now or to anything near it, as the following figures of the past ten years will show —

YEARS	No of prisoners remaining from previous year	No admitted in to the jail during the year	TOTAL	No admitted into hospital	Daily average of prisoners in jail	Daily average in hospital	Total deaths	Deaths per mille	Releases for sickness
1893	34	524	558	65	50.30	1.60	2	47.1	
1894	47	507	554	53	45.85	1.28	8	538.7	
1895	30	411	441	28	45.23	.25	2	51.5	
1896	56	640	696	75	58.08	1.93	8	168.8	1
1897	82	1,044	1,126	66	86.05	1.96	24	148.8	
1898	66	517	583	24	71.15	.61	3	49.2	
1899	85	681	766	63	80.47	2.25	3	48.6	
1900	90	1,458	1,548	240	146.19	8.35	34	315.0	2
1901	74	778	852	109	98.84	4.62	1	13.4	9
1902	81	920	1,001	120	94.08	3.48			4

The district of Palamau has always been known as one of the healthiest in Bengal, and the town of Daltonganj especially so. One of the most remarkable features of the mortality of this district is the extremely small number of deaths from diarrhoea and dysentery as will be seen from the following figures taken from the mortuary returns of the last ten years. The dispensary figures also verify the fact —

	YEARS	No of deaths from diarrhoea and dysentery	YEARS	No of deaths from diarrhoea and dysentery
Population of the District 619,000	1893	93	1898	60
	1894	199*	1899	90
	1895	134	1900	282*
	1896	118	1901	97
	1897	336*	1902	135

* Years of cholera outbreak.

The unhealthiness of the jail therefore could not be attributed to the unhealthiness of the localities from which the prisoners come, and the prevalence of diarrhoea and dysentery amongst them must entirely be due to causes existing within the jail. During the last ten years, three out-

breaks of cholera took place in the jail, viz., in years 1894, 1897 and 1900 respectively, simultaneously with outbreaks in the district, and people also suffered from conditions of scarcity. Naturally mortality in the jail during those years was particularly high, but this fact does not in any way affect the question about to be discussed, namely, prevalence of bowel-complaints, —chiefly dysentery, which even in the cholera and famine years of 1897 and 1900 did not prevail to any appreciable extent among the outside population.

My theory of the causation of jail bowel-complaints is summed up in two words, and those are "unaccustomed plenty." We feed our prisoners too well, but I am afraid not wisely. Quantities of first class English and country vegetables, fresh and dry, —throughout the year first class fresh unadulterated cow's milk, rice, wheat, maize and various pulses of the best quality, water pumped up by machinery, boiled in a carefully graduated boiler, filtered through elaborately arranged and costly filters, and finally examined and passed by the chemical examiner as "usable," pickles and preserves carefully prepared, fresh fruits—such as papaya, bael, lime—of the finest quality, sago, arrowroot, sugar and even Mellin's food for the sick are all, no doubt, excellent food, and human beings ought to thrive and live on it in perfect health, but there are human beings and human beings, there are concealed affinities and idiosyncrasies of which we know little or nothing, there are undiscovered laws, through the action of which, habits of the strongest kind become second nature. What is sauce for gander is therefore not always sauce for goose, and what is food for one person proves sometimes to be rank poison for another. It is my humble opinion that there would be less bowel-complaints in our jails if we kept our prisoners as far as possible under the changed circumstances and environments into which they come on the kind of food to which they were accustomed before they came under our care, instead of introducing them at once to a plentiful supply of things, some of which they had never tasted in the whole course of their lives. Jail bowel-complaints seem to me to be, to a great extent, analogous to what is known as "famine diarrhoea," which is almost an invariable result of a good and full meal after days of starvation or insufficient and indifferent feeding. I propose, in this paper, to give some details of the process by which I arrived at this opinion, for whatever it is worth, claiming nothing, asserting nothing, but with the earnest and sincerest desire that it may be tested and dealt with as it may be found to deserve. Perhaps investigation on these lines by some one abler than myself may lead to valuable discoveries of which I myself have no idea at present.

On taking charge of the Daltongunge Jail one of the first things I did was to read up its

history from the administration reports of the previous years, then to study the diseases generally prevalent amongst the class of men from which the majority of the prisoners come, both outside and inside of the jail, and, thirdly, their habits, mode of life, food and the method of cooking the same in their homes. I had ample opportunities of studying the last during my inspection tours in the district. Having obtained the necessary knowledge, I resolved to apply it to the dieting of the prisoners in the jail. Here the first initial difficulty arose, the Jail Code rules, which laid down certain scales of diet, certain articles of food and certain times of issuing them and certain ways of cooking, were in direct contradiction to the habits of the people. I therefore applied to the Inspector-General of Jails requesting that some relaxation in the rules may be made with regard to my jail, even if it be only as a temporary measure. My request was granted. The relaxation I asked for was substitution of makai (maize) in place of rice, which was then being given as the principal food. This was objected to on the score of the undesirability of sameness of food every day, and at all meals, I was permitted, however, to use rice for one meal and makai for the other meals (early morning and 11 o'clock meals), later on I applied for and obtained sanction to the use of rice for 11 o'clock meal and makai for evening and early morning meals—Jail Code rule requiring the use of rice in the evening meal. I also obtained liberty of discretion in matters of a few other minor changes, as it will appear further on.

I shall now quote from my Annual Report of the year 1902, in which details of my experiments have been given.

"The sanctioned (Jail Code) scale of diet was followed almost throughout the year 1901 with but slight modifications according to seasons. In view of the unabated prevalence of dysentery and the noted unhealthiness of the jail for years past a change was introduced towards the end of the year as an experimental measure in order to see what effect it would produce on the prevalence of bowel-complaints. This was entire stoppage of rice and milk as articles of diet and substitution of maize and *dahi* instead. The result was striking. The following statement shows three distinct periods during which three different methods of dieting were followed and the result —

STATEMENT No I

	First period May to September 1901 Rice for both meals, milk and dahi	Second period January to April, 1901 Makai, midday meal, rice, evening meal, milk and dahi	Third period October to December 1901 Makai both meals, dahi
Number of cases of bowel complaints			
Diarrhoea and dysentery	51	9	5

The experiment was continued during the year 1902, and the following statements of the result submitted every quarter —

STATEMENT No II

FIRST QUARTER OF 1902

MONTHS	Diet	Number of cases of bowel complaints	Daily average of prisoners
January	Both meals makai from 1st to 7th Makai, midday meal, rice, evening meal, from 8th to 31st	Nil in 7 days 13 in 24 days	91 02
February	Makai, midday, rice, evening	43 in 28 days	92 78
March	Both meals makai, from 1st to 23rd Makai, midday, rice, evening, from 24th to 31st	8 in 23 days 4 in 8 days	96 85

STATEMENT No III

SECOND QUARTER OF 1902

MONTHS	Diet	No of cases of bowel complaints	Daily average of prisoners
April	Makai, midday, rice, evening, according to Jail Code Rule 874, from 1st to 2nd Rice, midday, makai, evening, on special permission of Inspector General, from 3rd to 30th	6 in 2 days 26 in 23 days	87 42
May	Rice, midday, makai, evening	24 in 31 days	89 05
June	Ditto	19 in 30 days	78 28

STATEMENT No IV

THIRD QUARTER OF 1902

MONTHS	Diet.	No of cases of bowel complaints	Daily average of prisoners
July	Rice, midday, makai, evening	20 in 31 days	82 88
August	Ditto	18 in 31 days	105 37
September	Ditto	12 in 30 days	112 55

STATEMENT No V

FOURTH QUARTER OF 1902

MONTHS	Diet	No of cases of bowel complaints	Daily average of prisoners
October	Rice, midday makai, evening	3 in 31 days	106 30
November	Ditto	9 in 30 days	98 99
December	Ditto	6 in 31 days	90 20

A careful study of the above five statements would lead to two conclusions

1stly—That maize or *makar* as the chief and basic article of diet agreed better with the prisoners of this jail than rice

2ndly—That when one meal of *makar* and one of rice was used, rice as midday meal proved to be more agreeable than as evening meal

To sum up my experiences in the dieting of the prisoners of the jail from October 1901 to December 1902 categorically—

1 Rice for both of the principal meals (11 o'clock and evening) proved to be bad

2 One meal of rice and one of *makar* was better

3 Midday meal (11 o'clock) of rice and evening meal of *makar* was still better

4 Both meals of *makar* was the best

Further observations have led me to the opinion that a midday meal of rice and evening meal of *makar* is good for the hot months, and both meals of *makar* during the other months of the year. The early morning meal during the whole course of my experiments has invariably consisted of parched *makar* ground into coarse flour and gori (molasses). No cooking beyond the parching of the grains was adopted for this meal, and this has been found quite satisfactory. Before this rice used to be given for early morning meal most part of the year, gram or barley flour or a mixture of both in the cold season, generally from January to April,—salt only being used as a seasoning

It is a well-known fact in this locality that very few people belonging to the classes from which the majority of the prisoners come are accustomed to eat rice in their homes, their staple food, almost all over the district, being *makar*, just as wheat is in the United Provinces and rice in Lower Bengal. *Mohua* is also eaten generally everywhere in the months of April, May, June and July as a change,—of this later on

It is my experience, as well as that of the jailor who is a well informed and intelligent Behar, that in all parts of Bengal and Behar, where people—generally the well-to-do classes—take one meal of rice and one of some other grain—wheat for instance—they invariably prefer to have rice as midday meal. Wheaten *chappaties* or *poories*, as a rule, forming the last meal of the day

Fresh milk, as a rule, forms little or no part of the daily meals of the poor of this locality. It is used in the form of *dahi* on festive occasions. In some parts of the district it is considered a sin to drink or sell cow's milk

I may mention here that *makar* is not taken in these parts in the form of *chappaties* or cakes as in some Behar districts. It is boiled into a porridge and taken with a seasoning of salt, or gori only, by the poor generally. In the jail the *makar* porridge is taken with *dāl* and vegetables

Two other departures from the old practice in this jail was made during the year 1902 in the matter of dieting, viz, stoppage of sago, arrow-root and sugar as hospital diet and of boiled water, except in special cases. The following articles were used for sick diet—

1 *Makar flour*—To make this the corn was parched first in hot sand and then ground and passed through a fine sieve

2 *Plantain meal* of two kinds, one made out of green plantain, and the other out of the ripe fruit. The fruits were first skinned and then thoroughly dried in the sun, and finally ground and passed through a fine sieve

4 *Tikhoo*—This is a kind of country arrow-root very similar to what is commonly sold in tins in the bazar as Huldwan arrowroot, a variety cultivated in the Terai lands below the Kumaon Hills. The plant, from the tuber of which *tikhoo* is made, grows wild in East Bengal and especially on the hill-sides of Chittagong where the plant is known as *Phulga*. While in charge of Noakhali Jail in 1892 I collected quantities of these *phulga* tubers from the jungles and had *tikhoo* made in the jail. It is an excellent article of sick diet which can be obtained almost for nothing. The manufacturing of *tikhoo* can, I think, be made a profitable undertaking in the jail at Chittagong, where any quantities of the *phulga* are obtainable close to the jail for the mere collecting, and other jails can be supplied from there. I am so convinced of the excellence of this article of sick diet, especially when mixed with an equal quantity of plantain meal for cases of jail dysentery, that I would earnestly request the Inspector-General of Jails for a trial in all the jails of Bengal. Both *tikhoo* and plantain meal can be easily made in Chittagong, plantain of every variety being also procurable there at a small cost, except the variety known there as *Athya*, which is full of seeds, and the kind used generally as curry (*Kanch helu*). All the other varieties yield very nutritious and palatable meal

5 *Suttoo* or parched gram finely powdered as the *makar* flour

6 *Bael powder*—Made of dried green bael fruit, the rind and pulp are both pounded and made into fine powder

7 *Papaya powder*—This is pulp of papaya fruit dried and powdered

8 Powder of parched esuffgool seeds

9 *Molasses* instead of sugar. Nos 6, 7 and 8 were used more as medicine than food. Small quantities of them, however, were used by me with the *makar* flour as diet for chronic dysentery cases with good effect. Molasses or treacle (*gori*) was used as a sweetener, its chief recommendation being cheapness, and the only article of that kind which the poor of the locality are familiar with and accustomed to

Flour of parched *makai* like that of parched gram, of which latter some experience was published by Dr Ashe a few years ago in the *Indian Medical Gazette*, has a especial effect on the bowels, and I have known several cases of dysentery in the first stage being cured only by a diet of *makai* flour boiled and made into a gruel and salted, or sweetened with molasses, without any drugs. A mixture of *makai* flour and bael powder is still better. The meal of plantain is a nutritious and easily digestible food. Ripe plantain, old tamarind and *goon* beaten up and mixed together into a pulpy mass, and taken frequently with *dahi* or butter milk, is a common old woman's remedy amongst the peasantry of Bengal, and it is found very efficacious in mucous diarrhoea and first stage of acute dysentery. Meal made out of the ripe fruit is mildly laxative, while that made out of the green fruit is astringent.

Samples of water of the jail well boiled and unboiled were sent to the Chemical Examiner to Government for examination, and his opinion of both was "usable." On the strength of this opinion the boiling of water for general use was stopped especially as the prisoners showed preference for fresh water, and the hospital patients, particularly those suffering from bowel-complaints, were given warm water, at a temperature of 106 to 107°F. Warm water seemed to produce a very soothing effect in cases of acute dysentery in which griping and tenesmus were the prominent symptoms. Indeed, many of the more acute cases of dysentery, which were accompanied with a rise of temperature were successfully treated by me only by frequent dips of hot water, while the stomach was given complete rest for the first twenty-four hours. Occasionally I have added sulphate of soda and tincture of aconite to the warm water when the inflammatory symptoms were urgent with the effect that the more acute symptoms disappeared quickly.

Quoting from my report again, "as usual dysentery, diarrhoea, ague and ulceration of gums were the most prevailing diseases during the year under report. The statement given below will show the number of admissions into hospital and deaths from the first three causes during the last three years —

Disease	1900			1901			1902		
	No of cases	Deaths	Daily aver ago prisoners	No of cases	Deaths	Daily aver ago prisoners	No of cases	Deaths	Daily aver ago prisoners
Dysentery	73	—	—	55	—	—	48	—	—
Diarrhoea	63	4	110 10	10	—	—	28	—	—
Ague	36	1	—	10	—	—	86	—	91 00

The ulceration of gum cases were all treated out-door, 66 such cases occurred during the year, 39 among the under-trials and 27 among the convicts. As no records of these cases were kept in any of the previous years, a comparison as to their prevalence at different times and in different years cannot unfortunately be made. It will be noticed that, although there has been no deaths during the years 1901 and 1902 from bowel-complaints and fever, the incidence of the diseases has not shown any appreciable decrease.

From old records as well as enquiry, it appears that in former years only the more serious cases were admitted into hospital, ordinary cases being treated out-door till serious symptoms developed necessitating more watchful attention, while during the year 1902 cases were invariably admitted at the early stages, an accurate and satisfactory comparison between the present and the past years is therefore not possible, but one fact is clear that the detention in hospital during the year 1902 of each case of dysentery and diarrhoea was shorter than in the previous years, as the following statement will show —

	Average detention in hospital	Average detention in hospital	Average detention in hospital
	1900	1901	1902
Dysentery	18 21 days	10 65 days	8 23 days.
Diarrhoea	13 30 "	8 00 "	7 09 "

Particular attention was directed during the year 1902 to the causation of the bowel-complaints and of one other disease, almost equally prevalent in our jails, namely, ulceration of gums. Whatever may be the real cause or causes, which contribute towards the production of the former, it seems, that one cause is a too sudden change of food from one to which the prisoners have been accustomed from their early lives to one which is entirely new to them. Dysentery was the chief prevailing bowel-complaint, diarrhoea, in the majority of cases being only its premonitory stage, for I have found a concealed and neglected diarrhoea almost always developed into dysentery. The injurious effect on the bowels of a sudden change of food receive some verification from the five tabular statements given above, besides it has been noted that out of the forty-eight cases of dysentery admitted into hospital in 1902, fifteen occurred within the first week of the arrival of the prisoners into the jail, 13 in the second week, 8 in the third week, 8 in the fourth week and 4 in the fifth week, from which it would appear that more men suffered from the disease immediately after admission than later, and that the liability diminished as the subjects got accustomed to the new conditions.

of life and food. All the cases of dysentery, with the exception of two, were of mild form and were speedily cured, some by only a change of diet and others with but very simple treatment. The average detention in hospital of these cases was 8·23 days,—the shortest two days, and the longest twenty days. Only two cases out of the forty-eight were in hospital for twenty days each, both of which were men who suffered from chronic dysentery of a sub-acute kind before admission into jail,—one being also a habitual opium-eater whose allowance of opium was stopped.

I have an idea that ulceration of gums,—more correctly ulceration of the mouth,—ulcerative stomatitis—so common in Bengal jails—is a disease which is connected with a vitiated condition of the digestive organs and probably originates from the same or similar cause as jail dysentery. I am unable in the present stage of my investigations to express any opinion as to what that particular condition is. I have sometimes thought that an acid condition of the blood and of the mucous secretions due to mal-assimilation of food may be the cause, and this receives some confirmation in the result of the treatment which I adopted in all the cases which came under my observation this year with very marked results, which is as follows—

1 Milky juice of the rind of the papaya fruit was applied locally. In very bad sloughing ulcers, nitrate of silver lotion—20 grs to the ounce, and gargle of permanganate of potash, was also used.

2 Papaya pulp dried and made into a fine powder, was used internally in $\frac{1}{2}$ to 1 drachm doses twice daily after the principal meals.

3 Stoppage of the chutnies and acids of all kinds in the diet and substitution of one or two green chillies instead.

4 Green papaya fruit given as curry.

5 Meat and *dahi* alternately twice a week to the more weakly prisoners.

The following statement may be of interest in connection with this subject—

Months of the year	Number of dysentery cases	Number of cases of ulceration of mouth
January		
February		
March	4	
April	2	
May	6	
June	8	23
July	12	12
August	8	23
September	4	1
October		7
November	2	
December	3	

It would appear that both dysentery and ulceration of mouth cases occurred chiefly in the months of June, July and August, and that they increased and decreased in inverse ratio to

each other every month. Some of these cases bore a very strong resemblance to a condition known as psyllosis, being accompanied with various symptoms of dyspepsia and night fever.

The following statements will show that the mode of dieting detailed in this paper, not only kept down mortality in the jail, but also considerably improved the general health of the prisoners while affecting very great reduction in the expenditure—

Number who kept weight.	NUMBER GAINED					NUMBER LOST				
	Up to 1 lb	1 to 5 lbs	5 to 10 lbs	Over 10 lbs	Total	1 lb	1 to 5 lbs	5 to 10 lbs	Over 10 lbs	Total
457	160	157	89	8	414	12	15	14	4	45

Gained	53 74	per cent
Kept	40 43	" "
Lost	5 83	" "

The dietary changes in the years 1898 and 1899 with a daily average of 71·15 and 80·47 prisoners in the jail, amounted to Rs 36-4-2 and Rs 31 respectively. While during the years 1901 and 1902 with a daily average of 98·84 and 94·03 the expense was respectively Rs 16-2-8 and Rs 13-2-2. The average cost per prisoner under the head Hospital Charges decreased from Rs 8-1-7 in 1901 to Rs 6-13-1 in 1902, and there was a total saving of Rs 160-8-5 as the following statement will show—

YEAR	Daily average sick	Expense		
		Rs	A	P
1901	4·24	801	15	4
1902	3·48	641	6	11

NOTE ON THE MYCOID BODY FOUND IN THE BLOOD CORPUSCLES IN REMITTENT FEVERS

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In the issue of the *Journal of Tropical Medicine* for September the 16th, and November 15th, 1902, I described as a new hæmatozoon, the cause of a remittent form of fever of very frequent occurrence, often severe, and sometimes fatal a peculiar, and until then wholly unrecognised organism, for which I suggested, as a name indicating its most characteristic appearance, and probable affinities, the term "mycoid." In a plate published with the paper an excellent reproduction was given of an attempt made by the writer to portray

the commoner forms of the organism. But the singularly delicate reticulations, of which the bulk of the parasite is made up were but poorly indicated by my drawing.

More than a year has now elapsed since the publication of my paper, and although the reasons are not difficult to surmise, it is a matter for great regret that no observations should have been recorded, either confirmatory or condemnatory of my work, by any other observer. Yet the thing described, where it occurs, is obvious, its demonstration is simple, and its very clear relationship to attacks of fever, in persons in whom no other known, or described parasite can be found, is easy of ascertainment by anyone who may choose to make the investigation. When to this is added, that (at least in that portion of the Tropics in which my own work is carried on) it is at once the most prevalent, and often the only organism to be found in and therefore probably the cause of severe fever, it follows both that the recognition of this parasite is of importance, and that further to ignore its possibilities as a cause of disease is to neglect an obvious duty to patients.

I am perhaps in error in saying that no attention had been paid to the mycoid organism after the publication of my description. It was reported to me that a teacher at the London School of Tropical Medicine had indeed read my paper, had observed the organism in his own blood, and had come to the following conclusions:

(1) That being found in his own blood, at a time when he had no definite disease, it could not be a cause of disease at all.

(2) That "it was a kind of an idealised Plehn's body."

As these remarks were only reported to me at second hand, I need hardly deal with them. Indeed the first is one which its author would probably not care to father in print. As for the comparison of the organism to a Plehn's body, it could only be made either by a very imaginative observer, or by one who had seen neither of the bodies referred to.

At the time of publishing my first account of the mycoid organism I had found no means of fixing and making permanent preparations of it. In this aim I have, however, recently succeeded. Permanent preparation of mycoids, at least as permanent as aniline coloured preparations of similar objects ever are, may be made in the following manner:

Demonstration.—The demonstration of the mycoid body is simplicity itself. The blood to be examined is diluted with a little solution containing methylene blue or methyl violet, the former is far the better, spread like an ordinary film upon a slide, dried in air, fixed by heat, or formalin, and then examined. The fixed film should be lightly rinsed with water, to remove the excess of blue from the surface of the red corpuscles. The mycoids, almost instantaneously stained by this process, are recognised easily as a delicate blue trace of dots and filament, occupying the interior of the red corpuscle.

For ordinary clinical purposes, the best procedure is to first prick, and then wipe the finger, place over the puncture a small drop of the M B solution, squeeze blood into the drop until its bulk is doubled, then, proceeding leisurely, so that the organism may have the more time to become stained, to place the drop on slide or coverslip and to spread it with tissue (cigarette) paper, or needle, or by whatever means the operator prefers, as an ordinary film is spread.

Almost any neutral, or slightly alkaline solution, and almost any methylene blue will do for the purpose, but that which I have found to yield the best results, is distilled water containing 1 per cent of citrate of potash, and $\frac{1}{2}$ per cent of medicinal methylene blue. About one third by volume of this solution, added to the blood, is nearly isotonic and the colour change but little in appearance when normal to begin with, if left mixed in such proportion for as long even as twenty four hours

I have found them little altered even after a week's exposure.

Although the mycoids absorb enough stain instantaneously, to become clearly differentiated, prolonged exposure has the advantage of increasing the density of the stain deposited, so that the longer specimens for permanent preparations are left in the blue and potash ("M B K C") solution the better. From one to two hours yields excellent results.

Heat, and exposure to formalin vapour, as they are the simplest, so they are undoubtedly the best modes of fixation for mycoids. Alcohol sublimate, ethylic, and methyl alcohol, picric acid, osmic acid, are ineligible for the purpose of fixing, since they not only dissolve out the stain already absorbed by the mycoid body, but leave the latter, when exposed to their action at this stage, incapable of again, and as easily absorbing, the blue, or other stains.

The effect of the same agents after fixation with formalin is less disastrous, they still wholly dissolve out all the blue from the mycoid, but it can be restored at once by re-staining, after washing away all traces of the alcohol, or acid employed.

The essential step in the whole process is, that the methylene blue be added to the blood in the living state, or—what perhaps amounts to the same thing—while the physical conditions are those of the living state. For, whether because the selective action through which the mycoid body becomes stained, is, a function of its tissue only while living, or is dependent upon some osmotic condition which is destroyed by, and cannot be reproduced again after drying, certain it is, that *this organism cannot be rendered visible by stains added after the blood has been allowed to dry*—whatever agent be used then to fix it, or whatever the kind or degree of concentration of the stain—and I have tried nearly every agent accessible to the histologist—which may be employed.

Methyl violet and methylene blue are the only aniline dyes, by which the mycoid in blood is affected *intra vitam*. Neither congo, vesuvium, gentian violet, nor dahlia stains it in this state. After staining with M B in citrated blood, and fixing, in the manner prescribed, the organism may be stained, by substitution with many other of the aniline colours, *e.g.*, safranin, gentian violet, thionin, iodine green and methyl-green either in alcoholic, or neutral watery solutions, the latter being better. Or the intensity of the original *intra vitam* staining may be increased, by the use of Löffler's, Rege's, or simple watery solution of methylene blue.

Bismarck brown (Vesuvium) does not effect the mycoids at any stage, or in any degree of solution. They are equally unaffected by other such nuclear stains as cochineal, carmine, picro carminate of ammonia (Ranvier's carmine), and hæmatoxylin (Delafield's, Bobmer's, Ranvier's, Ehrlich's, Kleinenberg's). They stain badly with Victoria blue, extremely well with methyl violet, and iodine green. They cannot be stained by Lyons blue, or Nigrosin, purely plasmatic stains.

With the diffuse stains, such as Congo red, eosin, tropæolin, fuchsin, no differentiation between the mycoid bodies and the erythrocytes can be obtained, though, by dissolving the hæmaglobin out with alum, acetic acid or other solutions, and thereafter treating with eosin, they may be seen stained by these colours.

Jenner's stain, and Romanowsky's solution both dye the mycoid, but give pictures less clear than are to be obtained by other methods.

In the case of the mycoids the simplest methods of staining give, fortunately, the best results. The citrated stained film, having been dried by evaporation, and then exposed for ten to fifteen seconds to formalin vapour, is dipped for a second or two in Löffler's solution, in saturated watery solution of methylene blue (any brand), or momentarily in borax methylene blue, it is then again lightly rinsed with water, dried, and mounted. Other stains are to be substituted for

the methylene blue, better pictures are obtained if the fixed film is first washed with water thoroughly, it is then dipped momentarily into the ordinary carbol thionin solution, a saturated watery solution of safranin, or a 2 to 5 per cent solution of gentian violet in water, a 1 per cent solution of iodine, or methyl green, lightly washed, and dried. Of these, safranin and iodine green give the best and most lasting pictures. Mounted in oil, and even in balsam, all these stains gradually diffuse out and disappear. The method of rendering aniline dyed preparations permanent is yet to seek. The colours fade from the organisms on prolonged exposure to air, but can be restored by dipping in the appropriate solution afresh. It is thus better not to mount specimens required for reference, but simply to keep them in the dark in an air tight box, and re-stain them when required. But to this there is an objection also, in that after a few months the corpuscles become altered and decay. Dipping the specimen in a saturated tannic acid solution in water for a second or two, after washing and drying, renders them more permanent. Probably this is due to the hardening of the corpuscle.

Counter staining of the corpuscle, and other blood elements is not necessary for the perfect definition of the mycoid. But the employment of counter stains is useful, in helping the inexpert to distinguish, for instance, between mycoids, which their own overgrowth, or the dissolution of the enclosing corpuscle has left free in the plasma, and blood plates, or albuminous constituents naturally present in the serum, or dissolved out from the formed elements during citration, and precipitated afterwards. Two such methods may be mentioned—

(1) Stain thoroughly the fresh blood, by prolonged soaking in M B K C solution, or the fixed film, by treatment with saturated aqueous solution of methylene blue. Wash in water, dry. Dip momentarily in watery safranin solution. The mycoid bodies and nuclei of leucocytes retain the blue, which, however, is at once displaced from the blood plates.

(2) Stain the formalin fixed film with gentian violet (half saturated alcoholic or watery solution) for one second, wash (and remove solution). The mycoids, nuclei of leucocytes, and plates are stained in shades of violet.

Dip next momentarily in ammonia picro carmine (1 per cent solution). The nuclei and platelets retain the violet colour, but the mycoids are decolourised. They may be restained by further treatment. The stroma of the r b c is green.

(3) Stain the film in safranin, concentrated watery solution, for from one to ten seconds wash, and dry. Safranin stains the mycoids instantaneously in either watery or alcoholic solution. If a light staining only be given, the mycoids and blood plates are both rose pink, the nuclei more deeply stained, but of the same hue. Further staining only accentuates these differences.

Dip in sublimate solution for a second or more. The tint of the mycoids is changed to orange, while the plates lose their colour altogether. Wash, dry, dip in weak (2 per cent) watery gentian violet. The plates are now stained light violet, the mycoids remain as before of an orange tint, while the nuclei are rose red.

(To be continued.)

A Mirror of Hospital Practice.

IMAMBARAH HOSPITAL, HUGHLI, NOTES
ON SOME SURGICAL CASES

By D G CRAWFORD, M.B.,

LIEUT. COLONEL, I.M.S.,
Civil Surgeon, Hughli

DURING the period of a year and a half which I have spent at Hughli, the following

surgical cases, which are of some little interest, came under my notice, and were operated on by me in the Imambarah Hospital. Comparatively little operative surgery has ever been done at this hospital. The district is at best a small one, while from fully one-half of its area, it is both easier and cheaper to resort to Calcutta than to go to the *sadar* station. A certain number of amputations, chiefly for accidents on the railway, or in the neighbouring mills, are performed, a few cases of cataract come for extraction, and there is a little miscellaneous surgery, such as excision of tumours, &c., but Hughli is never likely to be much of a field for an enthusiastic surgeon.

CASE No 1—*Castration for tuberculous testicle*—Omar Ali, Mussalman male, 35, was admitted on 29th September, 1900, with a sloughing ulcer of the scrotum, which was said to have followed an attack of swelling of the testicle with fever, doubtless orchitis, two weeks previously. The sloughs separated on 1st October, but a sinus persisted and showed no signs of healing. On 29th October, under chloroform, this sinus was laid open. The right testicle was found to be completely disorganised by tuberculous disease, and was removed. The wound healed gradually, and the patient was discharged cured on 23rd November 1900. The only rise of temperature after the operation was to 102 on the evening after operation, and 99.2 the next evening.

CASE No 2—*Cartilaginous tumour of buttock*—Nazi Sheikh, Mussalman male, 40, was admitted on 25th November 1900 with a small tumour, the size of a lemon, projecting from the surface of the left buttock, and greatly resembling a rounded lump of horn. He stated that from childhood he had had, under the skin of the left buttock, a lump the size of a pea, freely moveable under the skin. This gradually increased in size, and reached its present size when he was about 25, *i.e.*, about fifteen years ago. At this time some one made an incision into the tumour, and some stuff came out, which he described as like rotten pumpkin. Evidently this tumour was a sebaceous cyst. Since that time the wound had never healed. The lump began to grow hard about four years ago. At present there is a hard lump, which both looks and feels exactly like horn, about one inch square, protruding half an inch above the skin of the left buttock. On 26th November, under chloroform, the lump was excised, it was of the consistence of cartilage on section. His temperature only once rose above normal, on the evening of 29th November, when it was 100.2. The wound healed by first intention, and he was discharged cured on 4th December 1900.

CASE No 3—*Liver Abscess*—Badi Min, Mussalman male, 36, was admitted on 28th February 1901, suffering from abscess of the liver, bulging under the edge of the right ribs, in the

right hypochondrium The patient admitted that he was in the habit of taking liquor, he said that he had been feeling ill for the last twelve days, but that he had had no fever His temperature that evening was 100 The next morning, 1st March, a fine trocar was inserted into the swelling under chloroform About 16 ozs of reddish fluid, like bloody serum, came out, followed by a few drops of reddish pus The swelling was then freely incised, and 20 ozs thick brick-red pus issued from a cavity about four or five inches in diameter, from which eight ounces more pus were then washed out A drainage tube was inserted This tube was removed on 19th March, but had to be reinserted again on the following day It was again removed on 4th April, but had to be put in again four days later on the 8th The cavity was then washed out daily with tincture of iodine solution The tube was finally removed on the 24th April, and the patient was discharged cured on 28th April The interest of the case lies in the fact that, from the day of operation to the day of discharge, a period of 59 days, the temperature never once rose above the normal

The patient again came to hospital nearly a year later, on 22nd April, 1902, with a large fluctuating swelling immediately below the scar of the old incision He said that he had kept good health till this swelling began to appear, some twelve or thirteen days before and that he had had no fever This abscess burst spontaneously a few hours after his admission On 23rd April, under chloroform, the abscess cavity was explored It was found to extend backwards for three inches into the loin, under the muscles of the abdominal wall, it was superficial, and had no connection with the liver A counter-opening was made in the loin, and a drainage tube passed through from front to back At the date of writing (24th May) the man is still under treatment in hospital The upper and anterior wound has healed, the lower one still remains open, with a sinus two inches long, extending from it As on the previous occasion, he has had no fever while in hospital

CASE No 4—*Spontaneous Gangrene*—Naya Ram Bagdi, Hindu male, 30, was admitted on 1st August, 1901, with gangrene of the right foot, said to be of two months' standing The tarsus was covered by a large stinking ulcer, in which the metatarsal bones were lying loose, the phalanges had rotted off The ulcer extended up the front of the leg to a point three inches above the inner malleolus The pulse in the left wrist was full and strong, in the right wrist imperceptible The left femoral artery was also much stronger than the right The right leg was amputated the same day, under chloroform, six inches below the knee Only a few drops of blood were lost The wound was stitched over a drainage tube and dressed That night,

and again on the night of the 4th August, the patient took off all his bandages When dressing the wound on the 6th, it was found gaping wide, all the stitches had come out On the 7th a small ulcer appeared on the dorsum of the second left toe, at a place which he said he had scratched From this scratch gangrene followed First the second toe, then the other toes dropped off, finally the whole soft parts of the dorsum of the foot sloughed off, leaving the metatarsal bones exposed and loose In this state he was removed by his friends on the 14th August, and no doubt died within a few days Meanwhile the amputation wound did not slough, but showed no signs whatever of healing, the flaps lay loosely over the ends of the bones His temperature varied from 99 to 102, and he was at times delirious

As the amputation wound on the right leg showed no sign of healing, it was considered that no good could be effected by the performance of a second amputation

CASE No 5—*Cyst of neck and floor of mouth*—Sukchand, Hindu male, 28, admitted on 26th December 1901, with an elastic tumour, apparently the size of a hen's egg, in the floor of the mouth, pressing up the tongue which was adherent to the upper surface of the tumour almost up to its tip He said that the tumour was congenital, but had increased greatly in size during the last three months On 26th December, under chloroform, an incision, two inches long, was made in the middle line of the neck, from the centre of the jaw downwards, and the tumour gradually worked out with the fingers It proved to be a sebaceous cyst, full of a very thick solid matter, like white wax in appearance, and fully as large as my clenched fist It was got out entire without rupture The wound was stitched over a drainage tube Although the floor of the mouth was not opened up, considerable suppuration followed, with burrowing of pus down the right side of the neck, for which a counter-opening had to be made over the upper end of the sternum on 4th January, when a drainage tube was put in from the upper to the lower wound Two large sloughs were removed, one from the original wound on 4th January, the second from the counter-opening below on 6th January He was discharged from hospital at his own request on 18th January, and attended as an out-patient till the wound healed

Although the floor of the mouth was not opened during the operation, I think that probably the wound was infected from the mouth It was curious that, with profuse suppuration going on in the neck, and immediately under the floor of the mouth, he never had any difficulty in swallowing The final result was quite satisfactory

CASE No 6—*Mycetoma, or Fungus Foot*—Puti Sheikh, Mussalman male, 60, was admitted

on 26th March, 1902, with a fungating ulcer, two inches in diameter, raised above the level of the surrounding parts, on the right heel. He stated that this ulcer began to develop about six months previously, following an injury from a thorn piercing the foot. He had also some enlarged glands in the right groin. The ulcer was excised, under chloroform, on 29th March, when the ulcerated mass was found to be $\frac{3}{4}$ of an inch in depth, the incision was carried through healthy tissue. At the same time an incision was made over Scarpa's triangle in the right thigh, and one gland the size of a large lemon, with three smaller ones, were excised. The glands were got out whole and unbroken, but on cutting into them the gland tissue was found softened and breaking down, and as black as ink. The glands, in fact, much resembled masses of blood clot. Their black colour was visible as soon as the superficial tissues had been divided. The wound in the groin had healed by 5th April, that of the foot healed very slowly, though assisted from time to time by numerous skin grafts, by 8th May this wound had healed, and he was discharged cured.

I have seen and operated in some half a dozen or so of cases of mycetoma, but I do not remember ever to have previously noticed enlargement of the glands in the groin in connection with any of them, and certainly never excised glands in any of the previous cases, so the black appearance of the glands was quite new to me.

CASE No 7—*Congenital (?) absence of intercostal muscle*—The following case was seen, not at the Imambarah Hospital, but at the jail. Hari Ghosh, Hindu male, 60, No 4938B, was admitted to Hughli Jail on 21st December 1901, with a sentence of two years' rigorous imprisonment. The sixth left rib runs outwards underneath the left nipple, which is situated over the upper border of the rib. The sixth and seventh ribs unite about one inch internal to the nipple. From their junction, outwards and backwards over a space $3\frac{1}{2}$ inches long by $1\frac{1}{4}$ inches broad, the muscular wall of the chest appears to be entirely wanting, the lung being covered only by the skin and pleura. On quiet respiration the skin over this space sinks about half an inch below, and rises about a quarter of an inch above, the level of the ribs which bound the space. On coughing the lung is forced out through the gap in a globular mass which rises an inch above the level of the chest wall.

On first seeing the man I supposed that he had undergone resection of a rib. He himself states that the condition was caused by the blow of a bullock's horn, when he was about ten years old. But the fact that no scar of any kind is visible anywhere near the place seems to negative both these views, and I presume that the deficiency must be congenital.

SUCCESSFUL OPERATION FOR CEREBRAL ABSCESS

By SATIS CHANDER BANERJEE,

House Physician, Medical College Hospital, Calcutta

SARODA, Hindu male, *at* 32, a shop-keeper by occupation, was admitted in Lieutenant-Colonel Lukis's Ward, Medical College Hospital, on the 2nd August, 1902.

He stated that about five months previous to his admission after a chill and exposure to cold he had running from nose and severe pain at his right ear, followed shortly by purulent discharge, which continued for two months. Severe headache came on with the stoppage of the discharge. Shortly after he had fever with delirium coming on with rigors, which was cured within a fortnight, but a constant dull aching pain in the head continued. Simultaneously with headache he began to vomit two or three times a day, not necessarily after food, and he had dimness of vision in his right eye. The headache and vomiting though not so frequent as before remained persistent. About a fortnight ago he noticed fine tremors of his left thumb and index-finger, which gradually increased up to the time of admission.

There was no history of syphilis or gonorrhoea. His complaints were, constant intense headache, worse in the morning, and purulent discharge from and pain in his right ear.

The headache, which was daily increasing in intensity, started from the right temporal region and radiated upwards and backwards. There was intense pain and tenderness a little in front of his right ear near the zygomatic process and over the parietal region about an inch behind and above the right ear, the tenderness being most marked at the latter situation.

There was pain and tenderness over the distribution of the fifth nerve of the right side. There were spasms of and tenderness in the right sterno-mastoid and trapezius.

The right eye used to water. He could not count fingers with his right eye. On ophthalmoscopic examination, the right disc was found swollen, margins not distinct, veins distended, left eye was normal.

He could not hear ticking of watch with his right ear at a distance of an inch, but could hear tuning fork on the mastoid process. Tympanic membrane was perforated, and there was pus in the middle ear.

There were clonic spasms of the right thumb and index-finger, the movement in the thumb being lateral, and in the index-finger antero-posterior.

Knee-jerks were exaggerated on both sides. No ankle clonus, no peculiarity in his gait. Temperature was normal all along.

Digestive, respiratory and circulatory systems were normal.

He was transferred to Dr Charles's Ward as a case of cerebral abscess in temporo-sphenoidal lobe, and on the 8th August was operated on in the following manner—

The operation area having been made aseptic, the Rolandic region was marked out, and the site for trephining chosen at 1" above the upper margin of and $\frac{3}{4}$ " posterior to the right ear. A horse-shoe-shaped incision was given, periosteum separated and a circular piece of bone taken out by a trephine $\frac{3}{4}$ " in diameter. The dura mater bulged out showing great intra-cranial tension. This being cut and reflected, softened brain substance protruded. A Paget's knife was introduced downwards and backwards for about an inch, whereupon on passing a director along the knife about 30 of pus came out and pulsation of brain was noticed for the first time. The knife was withdrawn and the director shifted slightly, when more pus came out. Total quantity amounted to nearly an ounce. When the brain was first incised, the whole of the left side of the patient was thrown into a state of spastic rigidity, but this gradually passed off, and when the operation was completed, the clonic spasms of the left thumb and index-finger ceased entirely. A drainage tube of moderate calibre was introduced to the bottom of the abscess cavity. When this was done clonic spasms of left hand and forearm reappeared, but on withdrawing the tube for a short distance they disappeared again. The dura mater was carefully stitched with silk-worm gut and the scalp sutured, an opening being made for the drainage tube. Antiseptic dressings and a capeline bandage were then applied.

Progress of the case after operation

8th August, 1902—He was restless towards evening. Headache and pain gone. Temperature varied from 102 to 101. He was very thirsty and felt very warm. Slept well under morphia. Had retention of urine which lasted for two days.

10th August, 1902—Dressings were changed, wound found aseptic. Pain over the distribution of the fifth nerve entirely disappeared. Pain at the right sterno-mastoid and trapezius gone. Vision of right eye improving.

His temperature became normal on the 19th August, and he had no complaint whatever. The vision was normal, and the patient was in perfect health and spirits—a marked contrast to his miserable condition on admission. He was kept under observation till 4th September 1902, when he was discharged. There was no recurrence of any of the symptoms. A silver plate was put on over the site of the trephine puncture.

Remarks—One important point to note is the absence of any fever in spite of pus in brain, this agrees with the opinion of Dr Beever who says that absence of fever is the rule. A contrary opinion is expressed by Drs Taylor,

Roberts, Osler, and Hare. Dr Fagge says fever is generally present, but it may be absent. The abscess cavity was situated in the right temporo-sphenoidal lobe. There was oedema around it extending to the motor area, and thus causing spasms of thumb and index-finger of the opposite side. Owing to increased intra-cranial pressure and possibly some oedema at the posterior fossa (right side), the right spinal accessory nerve at its exit from the jugular foramen was pressed on the edge of bone, and caused pain and spasm at the right sterno-mastoid and trapezius.

CEREBRO-SPINAL MENINGITIS IN BURMA.

By C C BARRY,

CAPTAIN, I M S.,

General Hospital, Akyab.

THE following four cases of meningitis and cerebro-spinal meningitis occurred in the Akyab jail during the months of November and December last.

The origin of the disease was very obscure since all the patients had been inmates of the jail for some long period previous to being attacked, and according to the registers no cases of this latter disease have ever occurred either in the Akyab jail or civil hospital. There was no over-crowding, unsanitary condition or insufficiency of food. The patients attacked all occupied different quarters of the jail, were on different work and had no opportunities of communicating with each other. The year was, it is true, somewhat more dusty than usual, the rains having ceased nearly a month earlier than is customary. In Akyab, also, a strong wind blows throughout the cold weather from off the sea.

The first case was attacked while in hospital, the other three while at work in their work-sheds.

The first case appears to have been one of acute pneumonia complicated with secondary meningitis, the other three true cerebro-spinal meningitis, since in all of these there were no signs of disease of the lungs.

This sequence of cases appears to be of considerable interest when the uncertain nature of the cause of cerebro-spinal meningitis is considered.

The first patient was a weakly man who had suffered much from diarrhoea and ague, and in addition was a confirmed opium-eater, he was therefore incapable of offering resistance to any microbial invasion.

In fact, the power of any organism would probably become heightened by the passage through his body. The other three patients were strong healthy men, who were at work up to the day they were attacked. Unfortunately owing to the transfer of medical officers, and subsequent

Date of attack	Date of admission into jail	Quarter occupied	Work	Symptoms	Result	Post mortem Examination
6-11-02	21-4-02	Hospital	None	Was in hospital convalescent from diarrhoea when he developed high fever. Became lethargic, with tremor of right hand and foot, no headache or spasm of muscles, fifth day developed signs of acute pneumonia and died.	Died 14-11-02	Marked excess of cerebro spinal fluid, convulsions of frontal, parietal and part of occipital lobes of brain of a light green colour, and on pressing them a fluid, the colour and consistency of whey, exudes. Base of brain bathed in same fluid. Cerebellum and spinal cord apparently normal. On section interior of brain appears normal. Right lung in state of grey hepatization. Left lung normal, other organs normal.
18-11-02	12-11-99	No 1 Ward	Polishing	Pain in extremities and high fever, third day restlessness, loss of speech and control over bladder and rectum. Pupils dilated. Herpetic eruption on lip and eyelids, fourth day stiffness of muscles of neck, Kernig's symptom present fifth day comatose, died. Temperature high.	Died 22-11-02.	Surface of brain congested sulci contain thick yellowish lymph. Base of brain bathed in some opaque watery fluid. Pons and medulla covered on anterior surface with greenish lymph. Cervical and dorsal portions of spinal cord covered with patches of similar lymph, other organs congested, otherwise normal.
28-11-02	15-11-01	Cell No 8	Mat-making	Headache stiffness and pain in neck, third day retention of urine and tremor of hands, became semi-conscious and remained so till ninth day. Recovered consciousness, and general condition much improved till 14th day when he became suddenly comatose and died, never any paralysis, pain only in head and neck. Temperature high and irregular, retention of urine throughout illness.	Died 12-12-02	Dura mater injected and adherent to vertex of brain which is coated with a layer of greenish yellow lymph, similar lymph also extends downwards, on both sides by fissure of Sylvius towards base of brain. Pons medulla and spinal cord injected, no lymph. Lungs in a state of hypostatic congestion, other organs normal.
16-12-02	1-10-02	No 3	Mat-making	Fever, acute headache, stiffness of neck. Then acute pain in spinal column. Kernig's symptom present. No paralysis or loss of control of bladder or rectum. Symptoms slowly abated and recovery, no lung symptoms. Temperature high and irregular for 14 days.	Recovered 9-1-03	<i>Nil</i>

lack of staining reagents, no microscopical examinations were carried out, and so no definite conclusions can be drawn. But it is of interest to note how in a select community, guarded from infection from without, a case of pneumonia and secondary meningitis was quickly followed by three cases of primary cerebro-spinal meningitis.

On the occurrence of these cases strict precautions were taken to prevent any spread of the disease by vacating the buildings, lime washing, and the destruction of clothes and bedding. No cases have now occurred for 2½ months.

A CASE OF CUT THROAT

By FEROS DIN MOHROOF,

Asst-Surgeon, Gujranwala

A WOMAN named H —, was admitted into the Civil Hospital, Gujranwala, on 16th July 1901. She was about 22 years of age.

On admission, she had an incised wound of front portion of her neck. It appeared that the cutting instrument was applied immediately under the chin in the middle line and so a flap of

skin rather a tongue of it was cut. The trachea was completely divided by the force of the instrument and the pharyngeal space opened behind. On either side the instrument had just escaped the carotid vessels. The trachea was divided between the true and the false vocal cords. She was in a state of great excitement and fear. Her temperature in axilla was 101. Pulse, soft and frequent, 102 in a minute. She could not breathe through nose always, and sometimes the flap of the wound would make a peculiar noise on the entrance of air into the lungs.

She was a well nourished female. The history of the case was that her throat had been cut while she was asleep by a relative of hers through jealousy.

This girl had a six-month conception on admission.

Operation — As breathing was much embarrassed when the flap would come in front of the wound, it was considered to establish a constantly patent respiratory opening. Therefore an opening was made in skin and trachea lower down in the middle and a silver tracheotomy tube introduced through this, which was then fixed to the neck.

The perichondrium of the thyroid cartilage was then brought together with catgut sutures on either side. The skin flap was brought together by sticking plaster. A large India-rubber tube was introduced through the wound into the back of throat for feeding purposes, and the end of it was sutured to the wound externally.

A cap was put on the head and a bandage was tied across the chest. Neck and head both flexed were maintained in this position by bands on either side between the head and the chest bandage, the chin was thus brought as much as possible close to the sternum, and the edges of the wound were brought in apposition for union. She was propped up in bed.

17th July, 1901—Patient was restless, temperature was 102. All fluid nourishment injected through the tube was brought back through the nose or the mouth. It was now she complained much of thirst and hunger, she tried to drink large quantities of water by mouth, and this would return by the tube in the wound.

She was fed by rectum which was first cleared of its contents with a large soap and water enema, and then small enemata of milk, each 2 oz in quantity, were injected after every 2½ hours.

18th July, 1901—Temperature 102. Enemata were given to maintain her strength of peptonised milk after every three hours. She was also given meat juice.

20th July, 1901—Some slight improvement. Temperature 99.4, but cough troublesome, pulse also quieter. A suppository of morphia ½gr was given to relieve the chest-symptoms. After meat juice injection the pulse used to revive and patient would gain some strength.

25th July, 1901—Yolk of two eggs was added to the enemata of milk to maintain the strength, but this was voided, and it appeared that the mucous membrane of rectum had become irritable and had refused to absorb any more nourishment.

All along attempts were made to pass a tube or a catheter through the nose or the mouth, but they all failed. It was proposed to the patient to open her œsophagus in the neck for nourishing her, but she refused.

27th July, 1901—Very weak and complains of pain in abdomen, and a bloody discharge from vagina, which is slightly dilated. No foetal sound is heard.

28th July, 1901—She had a miscarriage of a dead male child. She was blanched and bloodless. Ether was injected in the arm, and hot chicken soup in the rectum, and hot water baths to hands and feet. Ergot extract was injected to secure contraction of the uterus.

4 PM—She removed the tracheotomy tube and refused enemata.

30th July, 1901—Enemata of chicken soup were given alternately with milk, but she died at 2-30 PM.

On post-mortem examination it was found that œsophagus was also divided, but on a lower level to that of the tracheal wound.

This was also completely divided, the cutting instrument has penetrated the body of the vertebra. A very thin pellicle of bone interposed between the membranes of the cord and the wound in the body of the vertebra. This was probably due to the downward direction in which the instrument had been used.

Lesson—The lesson from the case to be learnt is that under the most favourable conditions, man cannot live without food for more than thirteen days. This is acute starvation. The stomach had shrivelled and become dry, and so were œsophagus and intestines.

NOTES FROM CONTINENTAL EYE CLINICS

VIII—WARSAW—MOSCOW AND ST PETERSBURG

FRANK H. ELLIOT, F.R.C.S.
CAPTAIN, I.M.S.

Warsaw—There are three eye clinics in Warsaw, viz, the Warsaw Eye Hospital and the Eye Departments of the General Christian and General Jewish Hospitals. The last named is said to be well up-to-date in instruments, etc.

The Warsaw Ophthalmic Hospital—Twelve thousand O.P.s are seen in a year. There are five surgeons. The want of money is severely felt, and they have to make shift with old apparatus in consequence. The O.P. room is cramped, and there is no operating theatre, operations taking place in the wards.

Instruments are sterilised by boiling, knives and all.

I witnessed a cataract extraction by Dr. Kanochi. *The sound eye is bandaged during operation "to quiet the patient"*. Kanochi uses sterilised saline solution, as he finds perchloride solution irritating to the conjunctiva. The face is washed with perchloride solution, and great stress is laid on the syringing out of the lachrymal canal before operation, and on never touching the cataract till after treatment if the least obstruction or excessive secretion is present.

A sclero-corneal incision was made, and iridectomy was performed with cross-action scissors (all the surgeons here use the combined operation), a cystitome was used to lacerate the capsule, the pupil was cleared by massage through lower lid after removal of the speculum. This was skilfully done, but still much cortex was left. A spoon was introduced twice (after being dipped in boiling water each time) and a further quantity of cortex was removed, much being still left.

The eye is dressed daily after first 24 hours, and atropine instilled each time. Both eyes are bandaged for 48 hours, and one for five to six days. If there is much secretion, Fuchs'

eyeshields are used in lieu of bandage. The usual bandage is a firm figure of 8.

For lachrymal obstruction dilatation is effected by means of sounds, *without slitting the canaliculus*.

Moscow, September 22nd—Visited a private hospital built and endowed by a wealthy Russian Lady (Mme Alexeyeff) on the plans of, and under the supervision of the present Medical Superintendent, Dr Adelheim.

The hospital, which is two years old, is a model of what an Ophthalmic Hospital should be, having been built on the newest lines on the strength of Dr Adelheim's experience, after he had visited all the modern European clinics and made notes of everything that he found good in them.

The day and night rooms for each block communicate with each other freely by doors through a common partition wall, whilst the free walls are largely occupied by double windows, so that ample cross ventilation can be secured in summer, and warmth in winter. There is an ingenious arrangement for supplying warmed filtered air in winter.

On every landing a small fireplace let into the wall provides for the burning of waste cotton-wool bandages, dust, etc. The flues communicate with those of the main fire, and I witnessed the total destruction of the waste dressings of a ward in a few minutes. Soiled dressings, etc., are thus consumed on the premises. Infection is in this way prevented, and cleanliness of the hospital environs secured. A small quantity of wood is added when the dressings, etc., are moist.

Projecting cupboards are avoided. In the operating room the cupboards occupy the whole thickness of the thick Russian wall, and are closed on each side by a single square of plate glass.

There is *no dark-room in the building*. Adelheim believes in plenty of fresh air and light, and uses bandages or dark glasses for the cases which need a diminution of light. Many of the floors are of Papyrolite, which has worn better and given more satisfaction than wood, cement, metal or any of the other materials tried.

There are four rooms for paying patients, but they are never used owing to the short-sighted policy of the management in refusing to allow the Superintendent to take operation fees for any case operated on in the house.

All the rest of the beds (54) are free, and the hospital is financed partly by endowment funds and partly by a municipal grant.

Fourteen thousand new O.P.s were seen last year, the total number of visits amounting to 40,000.

Nearly 2,000 operations are performed in a year.

All instruments are sterilised by *dry heat* at 105°C for $\frac{1}{2}$ hour before operation and are then transferred to $\frac{1}{1000}$ solution of bimide. Even the knives are so treated.

Cocaine and all other alkaloids are dissolved in a $\frac{1}{1000}$ cyanide solution, and are said to keep perfectly in all respects.

The same solution is used to sterilise the conjunctival sac before operations for cataract, etc.

Dressings, aprons, etc., are sterilised by steam under pressure.

Evisceration is nearly always preferred to enucleation, and *no general anæsthetic is used*. Solid cocaine is rubbed into the conjunctiva before the first circular incision, and after this incision the powder is again rubbed into the wound. No pain 'to speak of,' is said to be felt, and on no occasion have toxic symptoms manifested themselves.

Adelheim has extracted 850 cataracts. He keeps his incision in the sclerotic throughout, and raises a conjunctival flap, he always performs iridectomy and says his percentage of vitreous escape is very low.

For lachrymal obstruction he rarely excises the sac, and never slits the canaliculus. His standard method is dilatation by sounds through the uncut canaliculus. Each sound is left in about $\frac{1}{2}$ hour or more.

He has three assistants, each of whom is provided in the O.P. room with a table fitted compactly with all the necessary appliances for his work.

Self-registering perimeters and all modern instruments of diagnosis are in use.

Instrumental vibrating massage is freely used for episcleritis for hastening the absorption of cortical matter after cataract extraction, and for other conditions.

The instrument in use was invented by Dr Maklakoff, late Professor of Ophthalmology in Moscow. A small electro-magnet (which can be worked by a dry cell or from the main current of the town) communicates to a hammer a succession of rapid short blows (about 9,000 per second). This is effected by an ingenious arrangement of the axle-tree on which the revolving wheel of the motor turns. The principle is in fact that of Edison's pen. A brush can be substituted for the hammer, and in certain cases the massage is performed through small india-rubber capsules filled with water. The applications of these forms of massage are very numerous. The principal ones, however, appear to be in episcleritis and in secondary cataract. Several Russian ophthalmologists told me they had found vibrating massage *most valuable* in the treatment of those conditions.

The difficulty in treating episcleritis appears to justify my having described the instrument somewhat at length.

The substitution of a small needle for the hammer provides us with an exact, handy and speedy instrument for accurately tattooing any desired portion of the cornea. The part to be tattooed is covered with the requisite water colour beforehand, in this way the colour and outline

of an iris may be closely imitated. The colours chosen must be insoluble, and not transparent, and must be mixed in some viscid material (Maklakoff used honey), which is spread evenly over the part to be tattooed.

To get brighter deeper colours the needle pricks must be made obliquely and deeper than for the opposite effects.

China black, salts of lead or zinc (white), burnt or crude sienna, indigo, ochre, vermilion, etc., are suitable for use.

Hæmorrhage may slightly complicate the operation, which is performed under cocaine, adrenalin would be useful to control this.

Lastly, the little electromotor is used to drive variously shaped gouges, saws, etc., for bone operations, and it acts most beautifully in this capacity.

September 24th—Visited the Klinik of the Imperial University of Moscow, which is financed by the Imperial Government. It constitutes a small town spread over a large area and grouped around a central ambulatorium, whence the O Ps are drafted to each different branch hospital. The Klinik had its own church. The buildings are on sound modern hygienic principles, and the Eye-Klinik is a splendid building, well provided with all instruments and apparatus and in every way well equipped. I was shown round by the Principal Dr Krukoff, and also met Dr S. S. Golowin. Forty-five to fifty O Ps are seen daily during the seven or eight months the hospital is open. For the rest of the year it is closed.

A series of paintings of the morbid fundus on glass, the work of the late Dr Maklakoff, are used for teaching purposes. Each painting is made on the four surfaces of two adjacent plates of glass, a very realistic perspective being thus attained. These paintings placed in a window are excellent for class demonstrations.

The *operating-table*, here as in many other clinics, is recessed to allow the operator and assistant to get close to the patient.



FIG 1

Lachrymal obstruction, etc.—Sounds are passed after slitting the canaliculi, failing cure, the sac is excised.

Cataract—Professor Krukoff nearly always performs the combined operation. Dr Golowin prefers the simple. The latter surgeon admits to 10% of prolapse in his simple cases, but completely excises the prolapse and gets good results, so he does not fear the complication.

Krukoff operates on a couch-chair, standing behind for the right eye, and at the right front for the left eye, he closes the sound eye during operation with a wet antiseptic sponge, he

clears the lids carefully with perchloride solution and washes out the conjunctival sac with sterilised normal saline solution.

He makes a sclero-corneal incision, performs iridectomy, and removes cortex by massage applied through the lower lid. An assistant holds down the eye-ball with catch forceps, while the incision is made, and then raises the speculum to prevent pressure on the ball. *The operated eye is alone closed*, a perchloride solution pad and firm bandage being used.

Instruments are sterilised by dry heat at 105°C and laid in a tray, each instrument before use is dipped in boiling water, and then handed to the operator.

In the Polyklinik, McHardy's Perimeter, an astigmometer and other modern instruments of diagnosis of new and good patterns are in use.

Glaucoma—Krukoff employs anterior sclerotomy in early cases, iridectomy in later ones.

For lost painful eye-balls in glaucoma, Dr Golowin's operation of resection of 5 to 6 mm of optic nerve is employed.

The following are the steps of his operation—

- (1) Incise conjunctiva far out
- (2) Divide Ext. Rect. muscle
- (3) Dissect till optic nerve can be seized by catch forceps
- (4) Draw out and divide nerve on proximal side of forceps
- (5) Rotate eye inwards and divide the nerve close to the eye-ball
- (6) Replace and sew up the muscle and the conjunctiva separately

A presentable eye-ball is retained for years.

THE OPHTHALMO-TONOMETER

This instrument, invented by the late Dr Maklakoff, is simple, and apparently very precise. It consists of a hollow metal cylinder, within which there freely glides a small bar of lead (to keep the centre of gravity low in either position of the instrument). The two ends of the cylinder are hemispheres, of which the flat surfaces are covered by round plates of polished white glass, each being 1 cm in diameter.

The instrument weighs exactly 10 grammes, it is suspended by a wire loop handle.

In the same box as the instrument is found a small tube of aniline blue. A tiny quantity of this is placed on one of the end plates of the instrument with a probe, and is then worked into an even surface with the finger pulp. The colour must not be in excess and must be very evenly laid on.

With the patient's head horizontal, and the lids separated, so that they do not touch the globe, the instrument is brought over the centre of the cornea at a distance of 1 to 2 cm.

At a favourable moment, the cylinder is lowered on to the cornea, so that it stands for a fraction of a second on the eye ball by its own weight, and is then quickly lifted up.

On examining the coloured plate, one finds that a colourless spot appears in its centre, the size of this corresponding with the area of flattening of the cornea, produced by the weight of the instrument. To 'print' the result, moisten a piece of unglazed paper with a brush dipped in alcohol, and press the coloured plate of the instrument on the prepared surface. Fig 2 shows some results thus obtained.

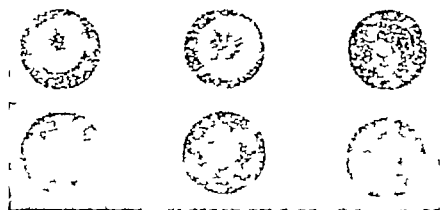


Fig 2

With a compass the area of flattening can be measured directly, or the specially prepared steel measures (Fig 3) can be used. The open space is placed over the print, and the size of the flattened area is read off in mm at the side.

After many thousands of experiments, Maklakoff found that the accuracy of the result obtained could be absolutely relied on, and that the method was most sensitive.

Obviously, the lower the tension, the greater the surface of flattening and vice versa.

A very large number of experiments enabled him to classify eyes into three categories —

(1) Those which gave a flattening area of less than 4 mm, these are undoubtedly glaucomatous,

(2) Those which gave a flattening area of 4 to 6 mm. These are on the border line and need watching, and

(3) Those which gave a flattening area of over 6 mm. Such are certainly not glaucomatous.

The method appears to be a precise one and worthy of much more attention than it has received. The weight employed (10 grammes) is constant, and has been arrived at as the most suitable after careful experiments, the change in form of the eye-ball produced (flattening) is the simplest possible, the force is applied over the naked cornea, and finally the results obtained can be easily and graphically recorded.

The instrument can be obtained from the following makers —

Schwabe of Moscow and

Mathieu of Paris.

Those who require further details will find them in a most interesting paper by Maklakoff in the "Archives d'Ophthalmologie" for 1892, edited by G. Steinheil of 2, Rue Casimir-Delavigne, Paris.

ST PETERSBURGH

September 29th — Visited the St Petersburg Eye-Klinik (38 Mochowaja) which has 25,000 new out-patients annually (total attendance 54,000). There are ten assistants. The hospital is over 80

years old, but is roomy and clean, the children's eye ward, semi-separate from the rest of the building, is comparatively modern. There are about 80 beds in all. There is a special ward for blenorrhoea cases in the men's, women's and children's departments. These cases, many of which are gonorrhoeal, are not strictly isolated from the rest of the patients, indeed it seemed to me that they mixed freely, but in no single instance has Professor Schroeder known of the contagion being carried to a healthy case. He would prefer an isolated block, but money is not available.

Preparation of instruments — These are cleaned with soap and water after being first washed and dried with wool soaked in $\frac{1}{2}$ and $\frac{1}{3}$ alcohol and ether. They are then placed for ten minutes in a $\frac{1}{100}$ th solution of biniodide, and finally placed in $\frac{1}{1000}$ th solution of biniodide till used. The knives, needles, etc., are all so treated.

For sterilisation of the conjunctiva $\frac{1}{1000}$ th solution of cyanide of mercury is used, the same being employed for irrigation during operation.

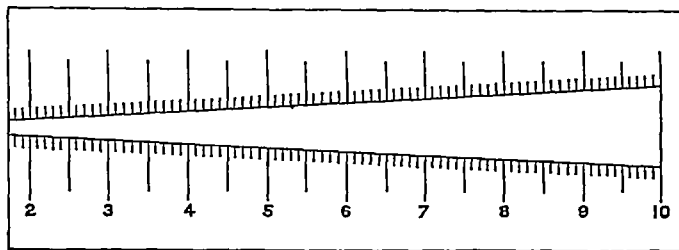


Fig 3

I witnessed a Cataract operation. The Surgeons here, from Schroeder downwards, are strongly in favour of the combined method. They never omit an iridectomy, if they can help, as they find it impossible to exclude all danger of prolapse, a complication they greatly dread.

They are averse to cutting any lashes, but cleanse the lid margins carefully with benzene. The incision is sclero-corneal, iridectomy, cystiotome for laceration, delivery with two spoons, massage and introduction of curette to remove the cortex.

In the deeply sunken eyes of the Mongolian type, Prof Schroeder meets with a few cases in which an upward section is difficult. He then performs a downward section and a downward iridectomy and finds the visual result quite satisfactory.

Glaucoma — The usual operation is iridectomy. Sclerotomy is performed if iridectomy is considered unsafe on account of the shallowness of the chamber.

Lachrymal obstruction — The stricture is dilated with sounds, and treated medically in the absence of a fistula. The canaliculus is not always slit for the purpose. If these measures fail, and in any case if a fistula is present, the sac is extirpated.

The electrical apparatus for diagnosis and treatment is very fine indeed, and McHardy's

latest perimeter is greatly valued and used to the exclusion of older types

Blinds draw up from below on Moorfields' principle. Other English ideas are in work. One of the senior assistants had been a student at Moorfields. New ideas are taken up with vigour and tried.

Paying wards in which each surgeon can operate privately on cases, have proved a success, and are much used.

Professor Schiöeder talks French fluently.

Dr G. Blissing, of this hospital, showed me his museum collection of sections of morbid eyeballs prepared by his modification of Priestley-Smith's method. They formed singularly beautiful museum specimens.

His method of preparing them is as follows—

(1) The freshly enucleated eye is suspended for an indefinite period in a 5% solution of formalin.

(2) The eye is next removed and frozen in a mixture of ice and salt, when hard, it is cut in half in any desired direction with a strong razor.

(3) The half of the ball, selected for the specimen, is placed successively in the following lotions—(I) 5% chloral hydrate, (II) 15% glycerine, (III) 25% glycerine, and (IV) 50% glycerine.

It remains in each lotion 24 hours, or till it sinks to the bottom of the vessel by its own weight.

(4) A gelatine mixture is prepared by thoroughly boiling 1 part of finest gelatine in 8 parts of glycerine and 8 of water. One gramme of thymol and the whites of two eggs are added to each litre of mixture during the boiling. The preparation is carefully filtered through blotting paper, and, when required for use, is warmed over a water-bath till it liquifies.

The glass capsule, which is to hold the specimen, is half filled with the melted mixture.

(5) The specimen is embedded under the gelatine with the cut surface uppermost, care being taken to avoid air-bubbles. If it tends to rise, it must be held under the surface with a needle, till the gelatine commences to set.

(6) As soon as the gelatine has set, the capsule is closed by a glass cover, the ground glass edges between the two being sealed with Canada balsam.

A CASE OF EXCISION OF THE OS CALCIS

By D. M. MOIR, A.M., M.D.,

MAJOR, I.M.S.,

Presidency General Hospital, Calcutta

25th January, 1902.—D. M., Eurasian girl, at six years, strumous type, scars in her neck, lungs clear, was admitted with a foul sinus on the outer side of the left foot, the result of an injury three months previously. Pus copious and offensive, the sinus led down to the os calcis.

4th February, 1902.—Sinus slit up, a carious cavity, the size of a cherry-stone scraped, pure carbolic acid applied, iodoform and dry gauze packing, immobilisation and suspension of the foot.

No improvement resulted. The disease seemed to be spreading in the bone, and extension to other tarsal bones was feared.

6th March, 1902.—The os calcis was excised by Farabœuf's method, the horizontal incision above the sole and the vertical one meeting it above in front of the tendo-Achillis. The bone was removed entire, no attempt was made to save the periosteum owing to the tubercular infiltration. The bone was afterwards found to be riddled with tubercular foci. As the adjacent articular cartilages of the astragalus and cuboid were slightly affected, they were thoroughly scraped and chloride of zinc solution (40 grains to the ounce) was applied. The cavity was then filled with iodoform varnish and tightly packed with gauze. The same procedure was adopted at subsequent dressings. The anterior suspension splint was discarded on account of a marked tendency to inversion of the foot. A straight back splint, with rectangular foot-piece and triangular side-wings was substituted, and acted efficiently. Pressure on the heel was avoided by a large pad behind the calf, and by fixing the foot high enough to raise it above contact with the posterior splint.

Iodide of iron, cod-liver oil, and creasote were regularly administered. In six weeks the wound was nearly closed, and by the end of April it was soundly healed, but the child was not allowed out of bed until the middle of May, and then only to go about on crutches without the left foot touching the ground. It was not until early in July that the foot was subjected to any pressure. At first the child was very timid in her attempts to walk, and was unwilling to discard the crutches. Gradually she gained confidence and walked fairly quickly with a limp in her gait, but this soon disappeared when she was given a pair of boots with the left one having a slightly higher heel. Her general health improved greatly after the second operation, and she gained steadily in weight.

6th November, 1902.—The foot was photographed. The horizontal and vertical scars are clearly shewn. The sulcus below the horizontal scar was caused by cicatricial puckering, and was not due to any incision encroaching on the plantar surface. The difference in level between the lower malleoli of both limbs is very evident.

Remarks.—This is usually a most satisfactory operation if performed in good time, chiefly owing to the anatomical relations of the os calcis not lending themselves readily to extension of the disease to the tarsal synovial membranes and bones. In this case the adjacent surfaces of the astragalus and cuboid were invaded,

consequently the more usual method of suture of the flaps and use of a drainage tube were discarded for packing and iodoform varnish



This form of splint acted better than the more usual anterior suspension splint. The enforced rest of some months before the foot is subjected to the slightest strain from pressure of the body-weight appears a safe precaution in such cases, where one can never be sure of the non-existence of latent tubercle.

NOTE ON THE PREVALENCE OF ELEPHANTIASIS, FILARIASIS AND HYDROCELE AMONGST PRISONERS IN THE CUTTACK DISTRICT JAIL

BY J. T. CALVERT, M.B. (LOND.) D.P.H.,
MAJOR, I.M.S.

THE first thing that strikes a medical officer who has served in other parts of Bengal, on his transfer to Orissa, is the large number of people he meets with suffering from elephantiasis. Subsequently, as the result of hospital experience he is surprised at the great prevalence of hydrocele of the tunica vaginalis and the large size to which these collections attain. Thus at the Cuttack General Hospital during the past twelve months, we have operated on 60 cases of elephantiasis of the scrotum, and performed 51 cutting operations for hydrocele of the tunica vaginalis. It may be noted that in the majority of these hydrocele cases, so great was the accumulation of fluid that almost the same operation was performed as in the cases of scrotal tumours, viz., removal of the greater part of the scrotal tissues and of the whole of the parietal portion of the tunica. In addition to the above 152, smaller hydroceles were operated on by other methods in the out-patient department.

An investigation has been carried on, with the able assistance of 1st Grade Civil Hospital Assistant Arjoon Mahanty, during the past year regarding the prevalence of elephantiasis, filariasis and hydrocele amongst prisoners admitted into the District Jail. The results of that inquiry are as follows—

Of 1,194 prisoners examined, 32 or 2.68 per cent were found to be suffering from some form

of elephantiasis, whilst 1,162 or 97.32 per cent were free from that disease. These 32 cases were made up as follows: elephantiasis of scrotum, 5, of left leg, 7, of right leg, 9, of right arm, 9, of left arm, 1, of leg and scrotum, 1. The blood of 200 of those prisoners who were free from any form of elephantiasis was subjected to microscopical examination with the following result—

Filariae were present in 52 or 26 per cent

„ „ absent „ 148 „ 74 „ „

The blood for these examinations was taken between the hours of 9—10 P.M.

Under the microscope the filariae presented the anatomical characters of *filaria nocturna*.

Of the 52 prisoners, in whom filariae were found, the blood of 20 was re-examined during the day in all cases with a negative result. Of the 148 prisoners, in whom blood filariae were absent during the night, the blood of 20 was again subjected to examination during the day. In no case were any filariae detected. Hence, I think, we may safely conclude that the filaria found was the *filaria nocturna*. Of the total number of 1,194 prisoners admitted, in 270 or 22.61 per cent hydrocele of the tunica vaginalis was present but of these 270 prisoners suffering from hydrocele, the blood of 100 was examined microscopically, the blood as before being withdrawn at night. In 24 cases or 24 per cent filariae were detected. The hydroceles of these 100 prisoners, whose blood had then been examined, were tapped and the fluid searched for filariae. In three cases, or 3 per cent only, were filariae discovered. In two of these cases filariae were also present in the blood. In the third case, which was one of double hydrocele with filariae present in the fluid of each sac, repeated blood examinations by day and night failed to detect any filariae. Adding this case to the 24 previously noted, we have 25 prisoners out of one hundred suffering from hydrocele harbouring the *filaria nocturna* in their system. This number so closely approximates the 26 per cent of the general body of the prisoners as to show that, whatever the cause of the extraordinary prevalence of hydrocele may be due, it cannot be attributed to the *filaria nocturna*.

Remarks—To say that hydrocele is very frequently seen in those who dwell in hot climates, probably as a result of the lax and pendulous condition of the scrotum and testicle, does not, in my opinion, give us much information as to the true cause of this condition. The Uriyas of this district and their forefathers have lived sufficiently long in a hot climate—if at any nearly remote period they ever lived in a cold one—for their scrota to have adapted themselves to local condition as regards heat. To what cause then is uncomplicated hydrocele of the tunica to be attributed?

THE
Indian Medical Gazette
 MAY, 1903

THE FLEA AS THE MISSING LINK IN
 PLAGUE INFECTION

WE have from time to time pointed out how very little is yet known as to the actual way in which plague infection is carried from the sick to the healthy

Direct infection through skin abrasions will not account for more than a small proportion of cases, direct infection by the lungs will account for pneumonic cases, but both of these ways together are not sufficient to explain all cases of plague. From time immemorial, moreover, the connection between rats and plague has been well known, but how the infection came from plague-infected rat to man remained unknown.

Some intermediary insect was naturally thought of, and the flea became a suspect several years ago from the pleading of Dr Simmond.

His arguments were thus summarised by the Plague Commission—

"(1) Plague rats are eminently infective when infested with fleas, and they cease to be infective when they have been deserted by their parasites

(2) Living plague bacilli are found in association with fleas, which are taken from plague-infected rats

(3) Plague can pass from infected rats to other animals which have not come directly in contact with them or with their infected excretions

(4) Fleas which infest rats will transfer themselves as parasites to men"

But the Commissioners considered the arguments not to be conclusive. We may also remember that some evidence against the flea was obtained from Australian experience of plague, but to many minds the question seemed to have been set at rest by the publication of the experiments on mouse septicæmia by Dr Nuttall of Cambridge.

We learn, however, from the February issue of the *Transactions of the Bombay Medical and Physical Society*, that Captain W. Glen Liston, I.M.S., whose name is well-known to readers of this Journal, has been studying the subject, and in a paper read before that Society,

he has advanced many arguments in favour of the flea being the missing link in plague infection. He points out how the flea theory can explain the undoubted facts, that certain houses are special sources of infection, and that plague has been conveyed from man to man by means of clothing. It is also obvious that fresh air and cleanly surroundings are enemies to plague, and certainly houses which are close, ill-ventilated and dirty are very apt to be infested with fleas and "such small game." He also points out a possible connection between the seasonal prevalence of plague and that of fleas, and he is informed that the maximum prevalence of fleas correspond in time with the maximum prevalence of plague.

A difficulty has been always raised in regard to this theory that the rat flea and the human flea are not the same species, and we do not find that Captain Glen Liston directly advocated the view that the flea bites the rat first and man afterwards. On this point he is disappointingly vague as yet. It is, however, pointed out that the Indian rat flea is of one species only, probably *Pulex pallidus*, and at first sight it much resembles *Pulex irritans*, the occasional parasite of man. In England the rat flea is very different (*ceratophyllus fasciatus*) from the *Pulex irritans*, as is also the dog flea. It is worth noting, however, as a matter of common observation that human beings chiefly suffer from fleas when dogs are or have recently been in a house, yet if the two species are so different, are we to believe that man is not attacked by the fleas which undoubtedly worry his pet dog?

This only shows that just as the starting of the mosquito theory of malaria revealed an immense ignorance about mosquitos, so the revival of this theory is met with a similar ignorance as to the species of fleas and their victims.

However, we are glad to find that this inquiry is in the competent hands of Captain Liston, and we look forward with interest to his further communications on the subject. In the discussion which followed the reading of the paper Major Bannerman, I.M.S., pointed out certain objections to the flea theory, in that the experiences of plague hospitals everywhere, which, full of patients and their often unwashed friends, could scarcely be considered as free from fleas, yet plague never spread from them, nor in the days of house-to-house visitation did the hundreds of susceptible people who daily visited infected

rooms ever got plague. These facts and others, however, may possibly be explained when we know more of fleas and their habits, and we hope that our readers will aid Captain Liston in his study of these always objectionable and now to be dreaded insects.

LONDON LETTER

YELLOW FEVER

WHAT interest has India got in yellow fever? The reply to this question is supplied by a paper by Dr Patrick Manson "On the Panama Canal and the Introduction of Yellow Fever into Asia" read at a meeting of the Epidemiological Society of London held on the 25th of February. The epidemiology of yellow fever is very remarkable. It has a very limited area of habitual prevalence and likewise a limited area of epidemic excursion. No case of the disease has ever, as far as is known, occurred in any part of Asia. The eastward extensions of yellow fever have not gone beyond the West Coast of Africa and Portugal, Spain and Italy, the westward extensions have been confined to places situated on the western seaboard of Central America. The disease is fortunately not endowed with strong powers of diffusion, and is peculiarly amenable to climatic and meteorological checks. The journey to Asia by the Eastern route is longer than by the Western, but the communication between the home of the disease and places intermediate between that and Asia has hitherto been freer by the former than the latter. Direct communication between Central America and Asian ports is comparatively rare and tedious. The disease has apparently been checked in its eastward progress by breaks in transmission by its inherent epidemiological frailty and possibly by distance and time. Dr Manson's contention is that the opening of the Panama Canal will stimulate and increase opportunities of conveyance westward, and that the larger traffic through the Canal will seriously enhance the chances of transportation of yellow fever from Panama, where it frequently rages, to Japan, China, Siam and India. He grounds his surmise on recent discoveries as regards the etiology of the disease. The germ of the disease may remain alive and active for eight or ten weeks in the *stegomyia fasciata* or other mosquito which may be conveyed by ships and inoculate susceptible subjects during the voyage or after arrival at

Asiatic ports, where conditions being favourable, other mosquitos may be infected and thus spread the disease.

Dr Manson's warning should not be scouted, and the precautions which he suggests as regards the destruction of mosquitos on land and at sea are obviously reasonable and wise, but some comfort may be drawn from the fact that, though sea traffic between Central America and the islands of Polynesia is considerable, no importation of yellow fever into these has as yet taken place. It is also a source of comfort that the extinction of yellow fever seems to be more easily accomplished by waging war against the responsible mosquito than in the case of malaria, witness Dr Goigas's success at Havana. Interesting and useful as Dr Manson's speculations are, it does not seem that the invasion of India by yellow fever is a very close or pressing danger.

PATHOLOGICAL EXOTICS

The history of small-pox, dengue, influenza, measles and other communicable diseases indicates the peculiar peril which attaches to the invasion of virgin soil by virulent parasites, and the increased facilities and speed of communication between places imparts to this peril a novel power. The recent history of plague shows how ancient limits have been crossed and traditional ideas exploded. The attitude of defence against disease invasions must in these days be more wary and alert than ever, but fortunately with a better understanding of causation, defensive measures, both internal and external, become more easy and effective. In this connection it is satisfactory to note how successful the intelligent efforts carried out by the Health Officer of the Port of Bombay to exclude the jigger from India have hitherto been. It looks as if similar efforts must be undertaken in the near future to bar the entrance of yaws and the sleeping sickness of Uganda whose etiology is at the present moment the subject of anxious research.

CANCER IN INDIA

The prevalence of malignant disease in tropical countries and among dark races has long been a matter of speculation and dispute. The ancient doctrine that malignant disease was rare or unknown among tropical people has, at any rate as far as India is concerned, been confuted, but the question has again cropped up in the House of Commons—propounded by

the indefatigable Mr Weir, who elicited from Lord George Hamilton the statement which is perfectly true, that no reliable statistics are in existence or obtainable relative to the prevalence and distribution of cancer in India. The Secretary of State for India further said that the Government of India had under consideration the introduction of a heading into hospital and dispensary returns, which might throw some light on the subject. Knowing as much as I do about Indian statistics generally, and dispensary statistics in particular, I doubt very much whether any real good would result from such a method of inquiry. A special investigation by a competent officer would be much more likely to yield sound information than any mixture of good, bad and indifferent figures, or if a collective investigation is decided on, it should be limited to carefully selected sources and agents.

K McL

19th March, 1903

Current Topics.

THE KASALI PASTEUR INSTITUTE REPORT

OF the 543 cases treated at the Pasteur Institute, during the year ending 8th August, 1902, only five died, or 0.92 per cent. Of these, 215 were Europeans and 328 Natives. We are very glad to see that the Natives of India are beginning to understand and make use of this Institute. The five cases who died were among the Natives, and the Director gives the following reasons for the higher mortality among them: (1) they were more severely bitten generally speaking, in fact, many were severely mauled, and the wounds were deep and numerous, (2) a large number were bitten by jackals, (3) they frequently wasted valuable time in coming for treatment, and (4) in only a few cases was cauterisation applied early and efficiently. These factors were seldom met with among European patients, but were the rule and not the exception among the Indian patients.

The expense of the railway journey is probably one of the most important factors in preventing poor Natives from coming early, and we strongly support the Director's suggestion that free passes—on the certificate of a recognised medical officer—should be given by Railway Companies to Kalka to deserving cases of poor Natives and Eurasians.

Further analysis of the figures is of interest. Of 178 cases bitten by animals proved to be rabid, there were 3 failures, of 94 cases bitten by animals certified to be rabid, there were no failures, and of 271 cases bitten by

animals suspected to be rabid, there were two failures. In addition, it is recorded that four patients (three Natives and one European lady) contracted hydrophobia within 15 days of cessation of treatment. These are not counted as failures, because the nerve centres became infected before treatment was completed. The large number of European and Native women and children who have undergone the treatment is satisfactory.

The animals which inflicted the bites in the 543 cases were,—dogs in 436 cases, jackals in 99 cases, horses in 5 cases, and cats in 3 cases.

The whole report is evidence of the large amount of good work done by this Institute, and it is with satisfaction that we have heard of the proposal for the establishment of another Pasteur Institute in Southern India.

FIRST AID IN BITES OF RABID ANIMALS

IN the recently issued report of the Director of the Pasteur Institute for the year ending 8th August 1902 (but printed and issued in March 1903) we find a useful note on first aid treatment for bites of rabid animals—which, if not new to medical men, is worth republishing for the benefit of the public.

The first duty is cauterisation of the wound at the earliest possible moment. Major Semple, R.A.M.C., the Director, recommends pure carbolic acid as the best and least painful application. It should be well swabbed into the wound, which should then be washed out with water to prevent too much destruction of the tissues, crude phenyle answers much the same purpose as carbolic acid and is available in many houses in India. Other caustics, potash, caustic soda, silver nitrate are fairly good, but they cause considerable pain, and nitric acid is not only very painful, but burns deeply and leaves ugly scars.

The best that can be said for any form of cauterisation is that, if thoroughly carried out, within a few minutes of the infliction of the bite it "will prevent the subsequent onset of hydrophobia in many cases, but not in all." Cauterisation can only destroy the virus *in situ*. Major Semple thus sums up: it is questionable if cauterisation does any good after eight or ten hours, it is probable that it does not do much good after three or four hours, and it certainly does no good after 24 hours. The one rule is, "the sooner the better." It is a mistake to ligature above the wound, and in the Director's opinion it is also a mistake to suck the wounds or excise them. As the virus affects the nerves, a ligature to control the blood-vessels can do but little good. As to sucking the wound it is dangerous to any one with decaying teeth or even cracked lips, and as for excision there is the danger of the virus infecting the larger wound made by the excision.

Above all, take the "first train to Kasali."

THE INCUBATION PERIOD OF RABIES

THE following extract from Major Semple's report is of great interest —

"1 The earliest period at which a man or animal bitten by a rabid animal could possibly show any symptoms of hydrophobia or rabies, would be fourteen days after being bitten, and probably not sooner than three weeks and this only in exceptional cases

"It could only be fourteen days, provided the rabid animal implanted the virus on the surface of the brain of the man or animal bitten, which is almost an impossibility

"The incubation period of the "virus of the streets" (dogs', jackals', and wolves' virus) when inoculated on the surface of the brain, is fourteen days as a rule. In exceptional cases it may be a few days more or less

"When the bites are situated on the head or face the incubation period is more than fourteen days. When the bites are situated on other parts of the body the incubation period is longer still. When the bites are slight, and only a small amount of virus implanted into the wounds, the incubation period may be several months

"The nearer to the brain the wounds are situated the shorter the incubation period, and it is shortest of all when the virus is put directly in contact with the brain

"In addition to the wounds being near the brain there are also a few more factors which assist in reducing the incubation period, viz., very deep and multiple wounds, and wounds inflicted on parts of the body where nerves are numerous

"Rabies virus prefers to grow in nerve tissues, and it only gives rise to rabies when it multiplies in the nerve centres (brain and spinal cord). It reaches the nerve centres by growing along the nerves from the seat of the bites

"These facts explain why it is that bites on the head and face, or deep and multiple bites on other parts of the body where nerves are plentiful, must always be looked upon as serious. Cases of this kind require rigorous and early treatment"

EGYPT 100 YEARS AGO

We give the following account of an Indian Expedition to Egypt, a hundred years ago, for which we are indebted to Lieutenant-Colonel D G Crawford, I.M.S. —

In 1801 an expedition was sent under Sir Ralph Abercromby, to drive the French out of Egypt. The force, which consisted of about 18,000 men, all told, landed at Rosetta in March 1801. Abercromby was mortally wounded, on 21st March, before Alexandria, and died on the 28th, when the command devolved upon General Hely Hutchinson. The French forces in Egypt amounted to about 33,000 all told, under the command of General J F Menon, a Frenchman, who had nominally become a Musalman, and called himself Abdullah Menon. The expedition was completely successful. The French garrison in Cairo, nearly 14,000 men, under Divisional General Belhard, surrendered on 17th June, and the garrison of Alexandria, under Menon, over 11,000, on 30th August*. The English forces, it must be said, were assisted by a large Turkish and Egyptian contingent. An account of this expedition, in two volumes, was published in 1802 by

* The remaining 8,000 are accounted for as follows, in return of the total French force —

Killed and died of wounds	3,000
Prisoners taken, apart from those at Cairo and Alexandria	3,500
Died of plague and other diseases	1,500

Robert Wilson, then a Major in Hompesch's Hussars, which formed part of the Cavalry Brigade, afterwards a K C B, and a General in the Peninsular War. The book had an immense success at the time, reaching its fourth edition before the end of 1803. It contains some interesting notes on disease in Egypt, from which are taken the following extracts —

"1 *Plague* — "The plague, as being the malady, which occasions the greatest alarm amongst those who have never been immediately acquainted with its nature, ranks as the most fatal of all distempers. This fever, now properly called epidemical, was long supposed to have been brought from Turkey in the ships charged with old clothes, which constantly came to Alexandria for a market, but these and similar reasons cannot any longer be maintained, since the plague has generated annually in Egypt during the last four years (although no such communication had been possible), and even chiefly commenced in Upper Egypt

"The source of this disorder must, therefore, be sought for in these phenomena with which the appearance is connected

"The plague commences in Egypt when the Nile begins to fall, and ceases to be fatal (almost to a day, many pretend precisely so), after the 17th of June, which is the period of the summer solstice, and when the Nile is supposed to receive the first increase

"As the waters of the Nile retire from the surface of the country they had inundated, a rich slime of considerable condensity is left, which forms a soil so productive, as to render Egypt the most fertile land in the known world, but unfortunately the benefits of Nature are always charged with a proportion of evil. This slime, subjected to the universal laws, is no sooner separated from its principle of action, then corruption ensues, and continues until all the putrid juices are totally absorbed by the heat of the sun, which then leaves the ground perfectly brittle, with the fissures previously described, the atmosphere at this time ceasing to be tainted, the plague throughout Egypt disappears

"This theory, however, natural to Egypt, cannot be immediately applied to other countries, where the plague annually rages, but an examination into their climate, soil, and the customs of the people, will certainly prove the position, that the plague is local, occasioned by a corrupted state of atmosphere, and never introduced by contagion

"None contend that the plague is not, like all fevers, more or less infectious, according to habit of body and duration in bad air, but that the disease hangs only in the atmosphere, or breath of the immediately afflicted patient, not to be conveyed by touch on a third person

"Since the French expedition to Egypt, great discoveries have been made as to the properties of the plague, by the ability and boldness with which the numerous cases have been treated

"*Assalini*, in his excellent work, amongst many other remarkable facts denying the existence of contagion in the plague, asserts that he found by observation in the French army, that if a battalion infected left its cantonment for another, the distemper not only ceased in that corps, but that no one having communication was exposed to the smallest danger, nor did the phenomena terminate here, for even if the battalion which occupied the post left by the diseased battalion quitted the place in ten days, the slightest symptom of the disorder never appeared amongst them

"As a proof of the plague being confined to the atmosphere, independent of the examples its particular locality in Egypt offers, he mentions several remarkable cases at Jaffa of men who, confined in the hospital of that town by the plague, escaped into the desert, and ended

voured to reach the army, but finding the attempt impracticable, returned again in three days, perfectly recovered

"This extraordinary cure induced Assalim to encourage a removal from Jaffa, whenever the first symptoms were discernible, and everyone on whom he could prevail to adopt this advice immediately became convalescent. Unfortunately, simple as the remedy is, death was more frequently preferred by the wretched patients, whom stupor and lethargy generally seized

"To remove still more those doubts which the prejudice of long received opinions will reluctantly allow to be dispelled, the fact must be stated, that the English and Turkish armies, which marched to Cairo, passed through a country where the plague followed almost every village, that they communicated, without any precautions, in the most intimate manner with the natives, established their ovens at Menouf where the plague raged violently, that the Turks even rifled the diseased in the pest houses of Rhamanleh, and at Cairo dug up the corpses recently buried, and yet that no individual instance occurred of the malady in the armies, whilst the troops who remained stationary at Aboukir were severely afflicted, and of whom one hundred and seventy-three died, yet neither at Rosetta nor Alexandria did the fever show itself

"In Egypt, where the villages approach within a quarter of a mile of each other, some were exempt from this malady whilst the most neighbouring were desolated. So common is this circumstance, that the inhabitants particularize to Europeans those villages in their districts, which during the season the plague has appeared in, yet do not themselves refuse to enter into them, nor indeed did the English hesitate, although frequently the dying were laid by the gate through which they were to pass. When the plague has been most virulent in Cairo, the inhabitants of the citadel have often been totally free from any infection, although having daily and promiscuous communication with the inhabitants of the city. There will be some difficulty in accounting an indisputable inference for this partial infection of atmosphere, which at present can only be attributed to the different degrees of fetid matter left on the ground, producing the quantity of putrid miasmata. The problem is however more arduous that if the plague be contagious, and not like the small pox, to be had only once in a life, how, in a country where no care is taken to check the extension, population has not long since become extinct

"In Cairo last year forty thousand people were supposed to be infected with the plague, and many of the French garrison died in that city, although the disease was treated in their hospitals with the greatest ability. The justly celebrated Dessagnettes was chief physician to the French army. The inspection of his hospitals obtained universal admiration, particularly the great one at Cairo. In Upper Egypt sixty thousand of the inhabitants perished during the same season. There, whole villages were swept away, and remained abandoned when the Indian army descended the Nile, but at the same time many instances occurred, when the nearest villages had not in them an instance of the malady. Then if the plague had been positively contagious, how comes it that this prodigious violence of infection did not extend the disorder indiscriminately and universally amongst all the people in Egypt, producing, of course, effects considerably more fatal? Nor can the observation attached to the return of Dr Young, under whose superintendence the English hospitals were preserved in the highest order of excellent arrangement, the sick treated with the greatest consideration, and whose philosophical mind so well capacitated him for the very important situation in which he was placed, controvert the position that the plague is not more contagious than other fevers. The servants attached to an hospital by continuing constantly in tainted atmosphere, must cer-

tainly be subject to maladies produced by bad air, and those instances afford rather proof in favour of a doctrine very important to humanity and the military service

"Egypt, in the possession of a power who felt interested in her prosperity, might in a course of years calculate on this disorder being altogether annihilated, or the pernicious influence so corrected, as no longer to possess the same caliginous properties. The introduction of lime, the use of coals, the paving of the streets in the cities, the formation of roads, the white washing of the apartments in every house, the draining of all stagnant waters, and the use of well burnt brick instead of mud in building the villages might in time correct the corrupted exhalations of the soil, whilst an attention to cleanliness would promote considerably the operations of science

"Until that too remote period arrives, the abilities of medical men have discovered medicines which check the fatality, if they cannot ensure always a certain cure. The ebullition of oils is found to be very beneficial, and mercury if the disorder has not gained already so much progress as to prevent the patient feeling in time the effects of that medicine, will generally produce the most favourable effects

"That daring spirit of investigation into the causes and effects of those diseases, whose principles are yet unknown, and which has so much distinguished the profession, was not to be intimidated by the menacing consequences of a bold examination into the powers and properties of the plague

"Dr White, an English physician, determined to discover if this malady, so destructive to a large portion of the globe, and which filled with apprehension the remainder, could not be checked, or rendered less virulent, by the introduction of inoculation. Resolved to become the patient of his own speculation, during the time the plague raged again at Rosetta, (which it did towards the full of the year, when numbers of sepoys died,) he inoculated himself with matter taken from the buboes of an infected person. The attempt failed twice, the third proved fatal, in three days after the symptoms appeared, he died, falling a much to be lamented victim to a disinterested zeal, benevolently and intrepidly directed for the benefit and happiness of the community

"This catastrophe may for some time operate against the prosecution of a very interesting theory, yet in the details of this case there are many incidents which will hereafter excite the attention and enterprise of the enquiring mind, and the fact may very soon be incontrovertibly established, that this fever is local, excited by the state of atmosphere, in its progress not contagious, which will be very consolatory to humanity, and particularly important to be ascertained, at a moment when the countries most subject to this dreadful pestilence are about to be more intimately connected with the civilized states of the world"

In a return of sick in the appendix, it is stated that, during the expedition, 380 cases of plague occurred, with 173 deaths. This mortality, under 50 per cent, appears very favourable, in contrast with the death rate of recent years in India.

"The number of plague patients between the 12th of April and 26th of August 1801, being the periods of the first appearance and termination of the disease—

Admitted	380
Died	173
Recovered	207
	— 380

"The deaths fell chiefly on the orderlies, nurses, and other servants of the hospitals. One staff apothecary, one surgeon of the first battalion, 27th regiment of foot, and three hospital mates died of the disease"

2 *Ophthalmia* is stated to have a seasonal prevalence the reverse of that of plague, cases becoming numerous as soon as the plague disappears. Its effects are on the whole, much worse than those of plague, which terminates either in death or in complete recovery. Nearly one native in five is blind of one eye from this disease, while very many have lost the sight of both eyes. "The French at first had more than two thirds of their army, according to their own reports, affected with this malady." The English troops also suffered considerably, about two hundred men lost one eye, while one hundred and sixty became totally blind. "Opium was found the best application. Lately some extraordinary cases have appeared which prove that ophthalmia is highly infectious."

3 *Dysentery* is said to have the same seasonal prevalence as ophthalmia. Some consider that it is caused by drinking Nile water, but this the author contradicts, though he says that at the season of the year when this disease is most common, Nile water becomes extremely thick, and even foetid. A tumbler full allowed to settle for five minutes, shows a deposit of one-third of slimy mud. Diet, he states is a more probable cause, lean and skinny fowls buffalo meat, and oily food, but the chief exciting cause is checked perspiration, often due to bathing when overheated. Nearly thirty soldiers were drowned in the Nile on the march to Cairo. Dysentery patients sent to Rosetta, or on board ship, soon recovered under the influence of the sea air.

Skin diseases, with itching, are extremely common. A list of these diseases is given, as follows —

"*Leprosy* — Of the worst species

Elephantiasis — Very common, and of the worst sort swelling the legs larger than a common bed bolster

Hernia — Extremely frequent

Syphilis — Of the most malignant kind

Dropsy, soreheads, worms, liver complaints — Very frequent"

Among "minor plagues of Egypt" are enumerated, rats flies fleas lice of every species, mosquitos and guats, scorpions and centipedes, and locusts

The Dr White above mentioned seems to have been an officer of the Indian Contingent, from the mention of sepoys as victims of the plague. The mortality, considerably under fifty per cent of cases, contrasts very favourably with the mortality from plague of late years in India.

The Indian Contingent was commanded by Sir David Baird. It disembarked at Kosseir, on the Red Sea, in June 1901, marched across to the Nile, and descended the river in boats. Baird arrived at Alexandria, having come on in advance of his command, on 1st September, just too late to take part in the fighting. He returned to India in 1902. The contingent was about 6,000 strong. Colonel Wellesley, afterwards the Duke of Wellington, was appointed in India second in command to Baird, but fell ill at Bombay, and was unable to go, fortunately for England, as the vessel in which he had taken his passage was lost at sea, never being heard of after it sailed from Bombay.

A return of the strength of the Indian Contingent shows the following medical officers as disembarking with the contingent in June, and as present on 31st October 1901. No names are given, but, from the composition of the force evidently medical officers of the Bengal, Madras, and Bombay services were present, as well as of the Army Medical Department. The P M O was Superintending Surgeon McGrigor of the A M D who received a commission from the E I Co, also as Superintending Surgeon in their service, to enable him to take command of their medical officers. He was afterwards P M O under Wellington in the Peninsular War and for many years Director General of the Army Medical Department being made a K C B and a Baronet.

Medical Officers in Indian Contingent

	JUNE 1901		31st OCTOBER 1901	
	Surgeons	Asst Surgeons	Surgeons	Asst Surgeons
Bengal Horse Artillery		1		1
Bengal Foot Artillery		1		1
Madras Foot Artillery		1		1
8th Dragoons		1		1
10th Foot	1	2	1	2
61st "	1	1	1	1
80th "		2		2
86th "		1		1
88th "	1	1	1	1
Bengal Volunteer, N I				1
1st Bombay N I		1		1
7th " N I	1	1		1
TOTAL	4	12	3	14

A FIELD SERVICE FILTER

We quote the following from our contemporary the *Sanitary Record* —

"The recent war in South Africa brought out prominently the need of a good field filter, one that was easily carried, and effective in doing the work it was designed for. Such a filter has recently been placed on the market by Messrs Slack and Brownlow, Abbey Hey lane, Gorton, Manchester, who claim that it is a distinct improvement on those hitherto in use. The principal feature of this new invention is that water is lifted by the pump from bucket or stream, and passes first through a clarifying filter, which consists of two very finely woven filtering bags, placed one inside the other. These bags are coated with a slime made by mixing about one ounce of Brownlow's clarifying powder with water into a thick cream, this is poured inside the inner bag and deposits itself evenly over the surface. From recent tests, we are informed, it has been demonstrated that not only does the clarifying filter remove the grosser impurities from the water, but it is distinctly successful in arresting germs. Water literally teeming with bacteria was pumped through at a high pressure, and the filtered water examined daily, at the expiration of a fortnight it was found that the clarifying filter had retained over 95 per cent of the germs."

After passing through the clarifying filter, the water goes fairly clear and practically germless to the sterilising filter, consisting of a tube of unglazed porcelain, and here the process of filtration is completed, and the most dangerous water rendered absolutely safe. These tubes are covered with a jacket made of the same material as the clarifying bags, and this jacket may also be covered with a cream made of the clarifying powder. The filter bags may be filled with clean sand or fine powdered wood ashes, in which case it is necessary to tie a piece of flannel over the inlet filter to keep grit from the pump. Each filter is supplied with spare clarifying bags and clarifying powder. The filter itself will indicate when it requires cleaning by means of the diminished output and greater force required to work the pump. It is then necessary to open the primary filter, remove the inner clarifying bag, place a new one in the filter, and add powder as before. The dirty bags can then be washed at leisure so as to be ready for future use. It will be seen that the advantage of this new jacket is that it catches and retains all slime, thus keeping the tube clean and increasing its life indefinitely and at the same time greatly increasing the flow of filtered water. The whole apparatus is very ingenious, and worthy of trial by the Authorities."

PRECAUTIONS IN DOG BITE

THE Annual Report of the Pasteur Institute is full of interesting points. The following remarks on "precautions to be taken when a person is bitten by an apparently healthy dog" are worth reproducing. In the first place it is to be remembered that a dog's saliva may contain active virus for two or three days before he shows any apparent symptoms of rabies, and in exceptional cases even seven or eight days before.

These facts suggest the following precautions —

When bitten by an apparently healthy dog the animal should be tied up and kept under observation for ten days from time of bite, if at the end of that period the dog is still healthy the person bitten has nothing to fear.

Should, however, during the ten days of observation the dog show any signs of rabies the person bitten should go *at once* to the Pasteur Institute for treatment, but if bitten on the head or face it would not be justifiable to wait for ten days—as a delay of four or even five days might be too late for successful treatment—let the treatment be commenced at once, and if after ten days the dog proves not to be rabid, the treatment can be stopped. It is also wise to cauterise immediately any bite from any dog no matter how apparently healthy it may appear to be.

MAJOR SEMPLE notes that it is not generally known that a bite from a rabid animal heals just as quickly and well as any other wound, hence the fact that the wound has healed up and is giving no trouble is no index whatever that it was not inflicted by a rabid animal. It is also worth noting that "a dog bitten by a rabid dog or jackal is quite safe for a fortnight at least and probably for three weeks, and the most likely time for rabies to develop is between the third and fifth week, so that the fact that one's dog was bitten some weeks before may easily be forgotten. Two months would cover the incubation period in most cases, more rarely three months, and in exceptional cases six months or even longer." It is however consoling to know that not more than 60 or 70 per cent of dogs bitten by mad dogs develop rabies. In case of mad jackals the percentage would be 85. If a dog is bitten by another dog presumably or certainly rabid it is best to destroy him, unless he is very valuable and there are means of properly keeping him tied up for three or six months.

TUBERCULOSIS IN JAILS

THE following quotation from an American contemporary shows that the question of tuberculosis among prisoners which has come to the front in India is being seriously grappled with in the United States —

"On the subject of tuberculosis, which is so markedly prevalent in prisons it is stated that the last

five years, as compared with the preceding five, have shown a decrease of 71 per cent in the total number of deaths from this disease in the three prisons named. The report then goes on to say, "This is largely due to the practice of transferring from Auburn and Sing Sing to Clinton Prison prisoners suffering from this disease in its earlier stages. It is the excellent result of practical effort on the part of prison officials, and especially on the part of Dr. Ransom of Clinton Prison, to utilize the limited facilities at their command for the benefit of humanity by the reduction of tubercular disease in the prisons, and thus diminish the danger of contagion from prisoners after their discharge."

ELEMENTARY HYGIENE FOR INDIA

"ELEMENTARY Hygiene for Indian Students" is the title of the little book by Major C. H. Bedford, M.D., I.M.S., now in the press. Major Bedford has also in the press what we are sure will prove to be a most useful *Toxicological Chart* for the treatment of poisoning cases. It is intended for use in all Government Hospitals and Dispensaries.

WORK ON MALARIA IN INDIA

THE reproach that the Government of India is doing little to fight malaria on malarial lines will not lie upon the Bombay Government. The *Bombay Gazette* of 19th March publishes a resolution on the work already done and to be done. We hope that the Government will see their way to appoint a Special Medical Officer to attend to this work.

SNAKES & PLAGUE

WE see from the *Proceedings* of the Sanitary Commissioner of Madras that the question whether snakes were susceptible of plague infection was raised. One striking case was reported which seems to show that a snake may become infected with plague by eating infected rats, but so far there exist no bacteriological experiments one way or the other.

VITAL STATISTICS

IN the Report of the Hyderabad Assigned Districts we find four pages devoted to vital statistics and medical relief, out of 93, while ten pages are devoted to education, and nine pages of summary of the history of the Districts.

SUPRARENAL EXTRACT

WE have been told that suprarenal extract has proved to be of great use in the treatment of chronically enlarged spleen. It is of course a most powerful vaso-constrictor, and seems to be a drug which has come to stay.

BERHAMPORE ASYLUM

THE new Central Asylum at Berhampore in Murshidabad District is nearing completion and is expected to be ready by June.

The new Asylum consists of series of buildings divided into cells. It will have a lecture theatre and a laboratory, and we are very glad to hear that twelve students will be regularly told off to attend a course of lectures there.

This is a manifest advance.

The Central Asylum is situated in the civil station of Berhampore, and a good house close by has been reserved for the Superintendent.

It has not yet been decided who the first Superintendent will be.

THE February number of the *Glasgow Medical Journal* contains an article by Captain G. Lamb, I.M.S., on the Action and Antidote of Snake Venoms going over the same grounds as former papers, wherein he demonstrated that Calmette's serum is only useful in case of cobra bites. Dr. W. K. Hunter also had a paper on the histological appearances of the nervous system in *laet* and cobra poisoning.

Review

A Brief History of the Hughli District—

By Lieut.-Col. D. G. CRAWFORD, M.B., I.M.S. Published by Bengal Secretariat Press, 1903. Calcutta.

THE present volume from the pen of Lieutenant-Colonel D. G. Crawford, I.M.S. (whose writings on the history of the Bengal Medical Service are so well known to our readers), was intended as part of the Medico-topographical History of Hughli District, which Lieutenant-Colonel Crawford had written as part of the general scheme of such histories for all Bengal Districts. Some doubt we understand, hangs over the fate of these proposed histories, as it is rightly or wrongly believed that the revision of Hunter's *Gazetteer* will render them unnecessary but at any rate the present *History of Hughli* appeared to Government to be so especially valuable that it was decided to publish it separately. We congratulate Government on the wisdom of this step, and all who are interested in the early history of the English in India will find this book of the greatest interest. We know of no such complete account of the early history of the settlements of various nations in Bengal as is here given. The chapters on the Portuguese and Bandel, the early settlements of the English, of the Dutch at Chinsura, of the French at Chandernagore, and the Danes at Serampore are full of details of great historical interest and value. Since writing the above we have seen the second part of this *Gazetteer* which is now out. It is a magnificent compilation of everything that is worth knowing medically about Hughli District and its inhabitants. It is a monument to Lieutenant-Colonel Crawford's learning and industry.

The Management of Children in India—

By EDWARD A. BIRCH, M.D., I.M.S. (Retd.) Calcutta. THACKER SPINK & Co., 1902. 4th Edition, Revised and Enlarged.

It is almost superfluous to again recommend to the notice of medical men in India such a

well-known book as Birch's *Management of Children in India*. We well remember how within a few days of our arrival in India, many years ago, we were challenged by the mother of a sick child with Dr. Birch's opinion, and we thereupon determined for our own sake to read and thoroughly digest the book, and we have never regretted it.

The present edition is a revised and enlarged one, and without departing from its original plan it has become more and more valuable and useful as well to the anxious mother in India as to the practitioner.

One section we do not remember seeing in our earlier edition of the book is the table on poisons, with symptoms and simple lines of treatment, but indeed it were vain to mention all the improvements in the new edition.

Ever since the book appeared in its primeval form as Goodeve's *Treatment of Children in India*, it has been a pronounced success, and we congratulate Dr. Birch on his fourth edition of a book which has become a household word in India. If any of our junior medical officers have not got the book, we advise them at once to order it, they will find it most useful in their practice.

Constipation—By S. SHERMAN BIGG, F.R.C.S.E. London. BALLIÈRE, TINDALL & Cox, 1902. Pp. 67. Cr. 8vo. Price, 2s. 6d.

THIS is an admirable little book describing in simple language constipation, its causation, widespread prevalence and its treatment.

Constipation is a complaint which is not confined to one class nor any one age, it affects all classes of men, women and children. Our author is very sound in his advice, and shows that a daily relief of the bowels by no means negatives the existence of constipation, a point almost always overlooked by the general public. The great importance of habit is duly insisted upon as the author says "Habit works wonders, and the cultivation of a fixed time for obtaining relief is a good method of assisting nature." "the same hour daily should become the fixed rule." "and clockwork precision is desirable. The advice given about diet and exercise is practical. Chapters are devoted to "simple," "habitual" and "chronic" constipation, and the details of the dietetic and medicinal treatment for each class of cases are detailed and useful.

The author writes "Constipation is apparently a simple matter to treat, but in reality a complicated problem. Drugs are prescribed not in haphazard fashion, but with careful thought to the condition, extent and variety of the disease, and also to the idiosyncrasy and constitution of the disease."

Dr. Sherman Bigg will be remembered by many of our readers when he was in the Army Medical Service and Staff Surgeon at Allahabad.

He has written several semi-popular medical books, but this one on Constipation we can confidently recommend as a very useful essay on a common and very important complaint. The book is nicely got up and printed, and a list of prescriptions at the end adds much to its value.

Nothnagel's Encyclopædia, Volume III.—

Edited by WILLIAM P. NORTHUP, M.D., containing articles on Measles, Scarlatina and Rothela by DR. TH. VON TURGENSEN, and an article on Diphtheria by the Editor. Published by MESSRS W. B. SAUNDERS & Co., Philadelphia and London.

THIS excellent volume quite maintains the high standard of excellence reached by its predecessors. The translation is carried out under the editorial supervision of Alfred Stengel, M.D., Professor of Clinical Medicine in the University of Pennsylvania. The separate volumes are edited by prominent American specialists who have been "requested to make such additions to the original articles as seem necessary to them to bring the articles fully up-to-date, and at the same time to adapt them thoroughly to the American and English reader." These additions are placed in parenthesis, so that the reader has no difficulty in distinguishing between the original matter and the additions.

The volume at present under discussion differs from the others as explained in the following paragraph taken from the translator's preface—

"In the present volume it has been necessary to substitute for one of the German articles (that on 'Diphtheria') an article by an American writer, owing to an arrangement made by the German author to issue a translation of his article apart from this series." * * * "with the exception of the article on 'Diphtheria' the articles in this volume and in the remaining volumes of the series will be those of the original German edition."

The book is handsomely got up and well printed in a type that is easy to read. It is liberally supplied with illustrations, and there are several really beautiful coloured plates showing the throats of diphtheria and follicular tonsillitis, Koplik's spots, etc. The translation has been well done, and the sentences are for the most part clear in their meaning and in good style, but to this there are some notable exceptions where the style is clumsy, and where the meaning of the sentence can only be gathered by reading it several times. A more careful revision will eliminate these defects from a future edition.

The American,—and to our view ugly,—spelling is of course employed, though where such examples as "centel," "fiber," "edematous," "iodid," etc., are used, we fail to see consistency in still using the unchanged spelling of "pneumonia" and "lymph." The words "gavage"

and "pried" do not appear to have yet reached the dictionaries on our side of the Atlantic!

The matter of the book throughout is excellent, and the completeness which characterises the discussion of each subject fills it with interest, though, with the exception of Diphtheria, very little recent progress has been made in these branches of medicine. The reader naturally turns early to the article on Diphtheria for recent information, and we predict that none who do so will meet with disappointment. The history of the study of this disease is given, and concludes with the remark "so that to-day diphtheria may be regarded as the disease of which we have the greatest knowledge as to causation, clinical symptoms, treatment and prevention." We take exception however to the attempt to include within our knowledge such unproved facts as that "the hands and clothing of physicians and nurses in attendance on diphtheria cases are undoubtedly a frequent source of infection" and that "amongst the more indefinite sources of infection are defective drainage, decomposing substances, sewer gas, etc." Even though the latter remark is immediately followed by the statement that the presence of the Löffler bacillus is absolutely essential to the production of diphtheria.

Does the writer think that "decomposing substances and sewer gas" contain the Löffler bacillus, and, if so, why has it not been found? It seems a pity to include loose unproved statements of this sort in a work which will rightly be accepted as an authority and doubtless often quoted in text-books. In this connection we remark that the author considers that "unless the presence of the diphtheria germs is shown, not only in the throats of those about the dairy or farm, but also (and this must necessarily be a difficult task) in the milk supply, the latter cannot be fairly condemned as the source of infection." These statements appear to us to lack consistency.

The chapters on etiology and pathology are well written and, as one would expect, full of interest. They are illustrated by some excellent plates. The question of diagnosis is well discussed, and we are glad to see that the importance of recognising the whole clinical picture of the disease is emphasized, and that clinical diagnosis is not entirely subordinated to the bacteriological—as modern bacteriologists would apparently have it be. The portion of the book dealing with the prevention of the spread of the disease is well worth reading, and the methods of disinfection are described in detail.

The preparation and use of antitoxin and the duration of immunity form a most interesting chapter, and the views expressed are well supported by the statistics of large epidemics in the New York Infant Asylum, in the New York

Foundling Hospital, and other institutions and localities. Where epidemics of measles and diphtheria have co-existed, measles cases have been found to shew a relatively shorter period of immunity resulting from antitoxin treatment, and it is recommended that the immunizing done be repeated every two weeks in measles epidemics. There is perhaps scarcely sufficient importance given to the deterioration of antitoxin that results from keeping. With all the bright picture of antitoxin results before us, it is melancholy to read of the high mortality due to broncho-pneumonia following diphtheria, and that "it is doubtful if, after its occurrence, we have to-day any better means of combating it than formerly."

The operation of tracheotomy is well and clearly described, and there is a happy omission of those useless anatomical details that have so unnecessarily been introduced into this simple operation—that only puzzle and confuse the beginner and are never thought of by the expert. Tracheotomy, however, except in rare cases finds little favour with the author whose allegiance is pinned to intubation. An interesting history of intubation is given with the ghastly death-rate that beset it in the early days before a satisfactory shape of tube was arrived at and antitoxin came to its assistance. Ample pictures, diagrams and skiagrams are given to shew the details of intubation. The author's vehement vindication—we had almost written "apotheosis"—of Dr. Joseph O'Dwyer reaches its climax in a paragraph that deserves to be quoted in full —

"The instruments of Dr. O'Dwyer answer every purpose for which they were intended. Yet, in spite of this fact, no set of instruments has been so constantly modified. All these modifications have been totally unnecessary. Many have been discarded as worse than useless. Putting aside the universal craze for bettering something which is absolutely good, the cause for these modifications may be attributed, first to bad results obtained from improperly made tubes and instruments. Upon this fact Dr. O'Dwyer was in the habit of laying great stress. In response to a demand, makers put upon the market their own tubes. These do not fit the larynx and cause serious injury. Second, to faults of the operator—insufficient experience, or inborn and sometimes unavoidable clumsiness, apparently at times national in its extent."

With considerable experience both of tracheotomy and of intubation we cannot but express our opinion that the author is unduly biased in favour of intubation, good operation though it undoubtedly is.

Measles is very fully and ably treated, and supplies by no means the least interesting portion of the volume. The simultaneous occurrence of two exanthems, the incubation of measles and the duration of the period of infectivity with a large number of illustrative cases fully realise one's expectations of interest. Koplik's spots are carefully described and illustrated by a beautifully coloured plate. The oc-

currence of *morbilli sine exanthemate* is not recognised by the author. Where diphtheria is endemic any occurrence of persistent laryngeal stenosis in a case of measles should be looked upon as an added infection of bacillus diphtheria and treated at once with antitoxin. Stress is laid on the impossibility of making a diagnosis of measles from the rash alone.

In dealing with treatment the time-honoured practice still so common in Germany of keeping measles patients in darkened rooms through fear of ophthalmic complications is rightly condemned.

"It should not be left to ophthalmologists to warn against the injurious effects of darkening the sickroom. The general practitioners should see to it that patients suffering from infectious diseases are not deprived of light."

The article on scarlatina, so rare in this country, will perhaps prove of less interest to Indian readers, but those who have been through an epidemic at home and have realized the trying questions that may arise in regard to isolation and disinfection will find this chapter of the greatest interest. The diagnosis of scarlatina from septic erythema and antitoxin rashes is well dealt with, but the often great difficulty of distinguishing these conditions at an early date is fully recognised. Nephritis and other complications of scarlatina afford a very interesting discussion replete with important clinical observations.

Treatment by cold water douching in selected cases is strongly supported and described in detail, and the important fact, never believed by the relatives and seldom recognised by the doctor, that "patients in a febrile condition do not take cold" is emphasised.

The volume concludes with a description of German measles, which though brief is up to the standard of the other articles. Throughout the book authorities are freely quoted, and a vast store of facts and clinical observations is included, giving the volume every claim to be regarded as a standard work of reference.

Diseases of the Skin—By H. RADCLIFFE CROCKER, M.D. (Lond.), F.R.C.P.

WE welcome the appearance of the 3rd Edition of this well-known work, which gives us an up-to-date summary of the subject, as many of the articles have been re-written and some diseases which were only briefly referred to in the former edition have now received a chapter to themselves. Modern methods of treatment by drugs and phototherapy—the X rays and the Finson rays are well described.

The book starts with a description of the primary and secondary lesions of the skin, then passes on to general semeiology, diagnosis, pathology and treatment, after this the various diseases are dealt with in their order according to the author's classification—Hyperæmiæ, exu-

datones, morbi appendicium, neuroses, &c. Each disease is dealt with as to its varieties, symptoms, etiology, pathology, anatomy, diagnosis and treatment. Great care has been devoted to the subject of treatment, and the numerous references in footnotes are very useful. The reader will find much information in the appendix on the subject of clinical examination, and the use of baths, with many formulæ.

Many diseases which we look upon as almost peculiar to India are well described—Delhi boil, Madura foot, elephantiasis, guinea-worm, anthurus, &c, and this alone should make the book popular amongst Indian students and practitioners.

The book is beautifully got up, nicely printed on good paper, but we should have liked to see a few more illustrations and plates.

Manual of Bacteriology—By MUIR and RITCHIE. Third Edition, 1902. YOUNG J. PENTLAND.

WE have previously had occasion to favourably review the earlier editions of this concise work on bacteriology, and the present edition maintains fully the good qualities which were then noted. The work has been brought well up-to-date without much increase of bulk. Immunity is more fully treated and the recent advances clearly described, while a useful chapter has been added on air, soil and water. The parasites of malaria and amebic dysentery are included within the scope of the work, and this book can be recommended as a reliable compendium of the science of bacteriology.

The Elements of Bacteriological Technique,

A laboratory guide to, for the medical, dental and technical student. By J. W. H. EYRE, with 170 Illustrations. W. B. SAUNDERS & Co., 1902.

THIS work is a handsome volume of 350 pages with numerous useful illustrations, chiefly of a diagrammatic nature. The descriptions contain full details of the various points treated of, and will be most useful for ready reference in the laboratory, as the increasing number of complicated technical processes required daily in bacteriological work necessitates the use of some such work as this. The preparation of media, etc., processes of staining, methods of cultivation and examination occupy the first and larger part of the book, while the latter part deals with the processes required in the bacteriological examination of water, sewage effluents, air, soil, milk, etc. For accuracy and detail the book can be thoroughly recommended.

A Text-Book of Surgical Principles and Surgical Diseases of the Face, Mouth and Jaws for Dental Students By H. HORACE GRANT, A. M., M. D., Professor of Oral Surgery in the Louisville College of Dentistry, &c. Philadelphia and London. SAUNDERS & Co., 1902, pp. 230. Illustrated.

THIS little book is intended for the use of students of dentistry, but as at present there are

no students of dentistry in India (as distinguished from the ordinary student of medicine), there is little hope of the work being in great demand in this country.

The first sixty pages deal with general surgery, a short account being given of bacteriology and inflammation, neither of which are very exhaustive. Some of the statements of the author will probably prove puzzling to the beginner, as for instance on page 11, we find that "all acute inflammatory processes, whether in the domain of surgery or medicine, are caused by bacterial infection," and again, on page 19, the writer informs us that "in his teaching of this subject (*i.e.*, inflammation), he has for many years adopted a division into physiologic or reparative inflammation, and pathologic or destructive inflammation, the first occurring without any infection, the latter due to bacteria." A marked feature of these chapters is the advocacy of the application of strong solutions of perchloride of mercury to fresh wounds, it is recommended that it should not be applied in stronger solution than 1/500, and it is stated that it should be usually employed in solution of 1/1,000, these solutions appear alarmingly strong to the ordinary individual, and would probably give rise, if liberally applied, to chemical inflammation in which we are old-fashioned enough to believe, not to mention the danger of absorption. The author expresses a dislike for iodoform which, according to him, is seldom used as a local application, this is hardly our experience in Indian hospitals.

It is stated that "the influence which attracts the leucocytes to the point favourable for colonization of bacteria is called *chemotaxis*," but the student might have been informed that there is both a *positive* and *negative* phase of chemotaxis.

Ulceration and Gangrene are discussed in Chapters IV and V, the two following chapters being devoted to Septic Infections.

The section dealing with Anæsthesia is disappointing, considering the importance of this subject to the Dental Surgeon, and the chapter on Hydrophobia, Epilepsy, Apoplexy, &c, seems out of place in a book dealing with diseases of the Face, Mouth and Jaws. The general pathology of Tumours takes up about twenty pages. Röntgen therapy is recommended for recurrent sarcoma, but the author is silent as the merits of this system of treatment in cases of Rodent Ulcer and Carcinomata.

The remaining hundred pages are taken up with descriptions of diseases of the Face and Jaws, but we cannot recommend the book to the practitioner who is in search of information on these subjects, for at the best the descriptions are superficial and not to be compared with sections devoted to the same subjects in our well-known text-books on surgery.

Current Literature.

ABSTRACT OF FEBRUARY NUMBER OF LES ARCHIVES D'OPHTHALMOLOGIE

THE February number still carries the name of the late Professor Panas on its cover as its first editor, and it opens with a biographical sketch of Panas' great life work. For six years the late "Doyen" of French ophthalmology bravely faced sure and slowly—advancing death, without shrinking from any part of his work, which he still could do. Obligated by the progress of progressive muscular atrophy of the Aran Duchesne type to abandon operative work, he still continued to use his powerful brain, which remained active to the last. Before he took up ophthalmology, Panas had made a reputation as a general surgeon, and as a pathologist. The small type enumeration of his many valuable monographs fills over four pages of the Archives, his later works being almost exclusively devoted to diseases of the eye. He was a great favourite socially, and the death at the ripe age of 70 years of this brilliant Greek, is widely mourned in the country of his adoption.

Exploration of the pupil by Dr. H. Coppez of Brussels.—The writer pleads for more system in the observation of pupil changes. He adopts the view that a dilator muscle exists in the iris, and is controlled by the sympathetic, he traces at length the nervous mechanism of pupillary movements, and lays down a scheme for the methodical examination of cases which deviate from the normal. The photo motor reflex is to be examined by day light, noting (1) the relative diameter of the two pupils, (2) the diameter in mm. of each pupil, (3) the direct reaction of each pupil to light (normal, diminished or abolished), (4) the consensual reaction of each pupil to light (n l, d—d, or ab—d), and (5) the reaction of each under convergence and accommodation.

When the inequality of the pupils is slight, being due to physiological causes, or to lesions of the dilator muscle, a feeble light must be used. It is then necessary to note (1) the relative diameter of the two pupils, (2) the effect produced by instilling cocaine on the side of greater dilatation (no increase of dilatation will take place in spasmodic mydriasis, there will be a maximum dilatation in paralytic mydriasis, and a moderate increase of dilatation in a healthy eye), and (3) the effect produced by instilling atropine on the side of greater contraction (feeble dilatation in paralytic myosis, and normal dilatation in spasmodic myosis).

Regeneration of the Vitreous Body by Dr. A. Hæmers.—(From the Pathological Laboratory of Ghent University). The writer claims to have proved that loss or injury of the vitreous is repaired at the expense of "exoplasmic products" derived from the supporting framework of the retina, (2) that the vitreous body in the embryo has intimate relations with the internal lamella of the secondary optic cup, (3) that the vitreous body in the adult is in certain species in close relationship with the sensory portion of the same lamella, (4) that lost vitreous is replaced by a new formation, obtained at the expense of the supporting framework of the retina, and (5) that the vitreous must therefore be ranged amongst tissues of ectodermal origin. It is in fact closely related to the "exoplasmic formations" described by Studnicka in the spinal cords of lower vertebrates, which are supposed to be secretion products of the neuroglia elements.

R. H. ELLIOT, M.B.B.S. (LONDON), F.R.O.S.,
Captain, I.M.S.

SURGERY

Empyema in Children.—Dr F. J. Cotton has made a study of the records of 180 cases of empyema

in children, 45 treated by himself 86 verified as to result, and 146 with fairly satisfactory data. All cases were under twelve years of age, and the youngest was only seven months, 51 per cent were under and 49 per cent over five years of age. The great majority of cases followed lobar pneumonia. Out of 119 cases there was antecedent pneumonia in 104, and pneumonia was probable in nine more. In only four was the affection definitely primary. Tuberculosis had but a slight rôle in causation. There was no case which gave positive support to a diagnosis of tubercular empyema.

Cultures were recorded in 48 instances. In 33 pure pneumococcus cultures, in a double empyema pneumococcus on one side, streptococcus on the other, one pneumococcus and staphylococcus, one pneumococcus and saprophytes, in seven pure streptococcus, two staphylococcus, one saprophytes only, and two sterile.

There was great variation as to date of empyema following the pneumonia, the average was nearly seven weeks. The usual type was total empyema, encapsuled cases were the exception. In children the amount of effusion tolerated without cyanosis and dyspnoea was much greatly relatively to adults.

Operation.—Preliminary tapping was always done. In seven cases nothing more was required. The usual operations were—Incision in the 7th or 8th space in the axilla, or subperiosteal resection of the 7th, 8th or 9th rib, about one inch being removed in the mid or posterior axillary line. Tube drainage was used. (*The Boston Medical and Surgical Journal*, 7th July 1902.)

Dr Cotton expresses a preference for the excision operation, chiefly because it gives room for digital exploration and for scooping out large fibrinous clots, lining the pleura. He is not enthusiastic about counter openings, and his experience of Estlander's operation was not a happy one.

Temporary collapse was not an uncommon complication, and hæmorrhage occurred on the table several times. The bleeding always yielded to hot irrigation. *Per se* irrigation is not to be recommended in these cases, he considers it "probably dangerous and hardly useful," and experience teaches us that this opinion hits off the truth. Irrigation in empyema operations is usually best confined to the complication of hæmorrhage.

There were 28 deaths in the whole series, a mortality of 14 per cent. Under two years it was 37 per cent, between two and five years 20 per cent, and over five years 7.5 per cent only, a striking difference. Of these deaths 6 or 18 per cent occurred in 33 pneumococcus infections, and 3 or 37 per cent in 8 streptococcus infections, i.e., twice as high. Infection and exhaustion were the two most frequent causes of death.

As regards re-expansion of the lung, it was often noticed before the patient was lifted from the table. Empyemata that appeared to heal soundly often broke down later, and recurred either as localised or extensive empyemata.

His general conclusions are thus summarized—

(1) Empyema in children usually follows lobar pneumonia—after a varying interval.

(2) The infection is usually with pneumococcus.

(3) Spontaneous cure, even when aided by tapping, is rare.

(4) Operation should not be delayed, as time lost is strength lost, and the issue is largely one of nutrition.

(5) The best form of operation is in general the subperiosteal resection of an inch of the 8th or 9th rib in the posterior axillary line, the evacuation of pus and fibrin masses, and tube drainage.

(6) Irrigation at or after operation is not usually advisable.

(7) The routine after treatment in fresh cases should be tube drainage, the tube being progressively shortened, and removed when the cavity is nearly healed.

(8) Where failure to heal seems to depend on failure of the lung to re-expand, treatment by valve or suction

apparatus is indicated. This is especially of value in the more chronic cases.

(9) The mortality is about one in seven, in small children it is much greater than in those over five years. The causes of mortality are, in the main, beyond our control.

(10) The great majority of cases heal even when the healing is delayed for many months, chronic empyema, in the strict sense, is rare in children.

(11) The closure of the cavity depends mainly on nutrition or adequate drainage.

(12) Recurrences may occur from faulty drainage at any time, and they may occur years after apparently sound healing, without obvious cause.

(13) Deformity of the chest is usually temporary and yields to treatment.

(14) Long continued discharge from the cavity is not infrequently followed by chest deformity and scoliosis of a severer type, permanent and sometimes extremely severe.

Tubercular Testis—Dr Orville Horwitz, of Philadelphia, has published an analysis of ninety six operations for the relief of Tuberculosis of the Testicle, which he had previously read before the American Association of Genito-Urinary Surgery. In 55 cases castration was performed, epididymectomy in 18 instances, and the remaining 16 were treated by incision and drainage, or curettage, for abscess of testis or epididymis, or scrotal sinus following abscess. He favours the conservative course of resecting the epididymis instead of castration when the epididymis is alone supposed to be infected by the tubercle bacillus. There appear *prima facie* reasonable grounds for doubting the wisdom of the less radical course, and there are many surgeons who deem it sounder to castrate when any of the glandular structures of this organ are invaded by this bacillus.

The disease commenced in the epididymis in 48 cases, in the testis in 27 cases, and in the remaining 21 cases the primary lesion appears to have been in the kidney in 3, in the prostate vesiculæ seminales or bladder in 14, in the lungs in 3, and in the hip joint in 1 case.

As regards etiology, traumatism has been demonstrated as the starting point both clinically and experimentally. Gonorrhœa is also shown to be a predisposing cause. The spermatic artery bifurcates just before entering the epididymis, and the vessels which ramify in this are more tortuous and smaller than in the testis. Hence it is, possibly, that primary tubercle of the epididymis is commoner than in the testis.

In these primary cases the disease usually begins in the globus major, whereas, when the disease starts in some other part of the genito urinary tract, the secondary focus is usually found in the globus minor, and this is the common seat of induration left by a gonorrhœal epididymitis. Hydrocele was a concomitant in only 16 of the 96 cases, and was usually associated with the tubercular testis as opposed to the epididymis, where it was very uncommon if only the epididymis was involved. In none of these hydroceles was there much fluid accumulated.

The author's conclusions are—1 Primary tubercular infection of epididymis is commoner than that of testis.

2 Infection of epididymis followed by infection of testis is commoner than *vice versa*.

3 Primary infection of epididymis or testis occurs through the circulation, and may occur on the site of a slight trauma or be associated with an inflammatory attack such as that caused by gonorrhœa.

4 Secondary involvement of epididymis or testis usually follows primary invasion of the seminal vesicles, prostate, urethra, bladder, ureter or kidney.

5 There may be rapid invasion of the testis, with acute inflammation and abscess, or the onset may be slow and gradual.

6 In doubtful cases, with only one focus of disease, the tuberculin test is of value.

7 In doubtful cases, with hydrocele, the fluid should be examined for tubercle bacilli.

8 Injections of iodoform or sulphate of zinc are not advisable.

9 Epididymectomy is recommended for quiescent encapsuled, caseous nodules in the epididymis.

10 It is alleged that epididymectomy with resection of the vas deferens is not followed by atrophy of the testis.

11 Drainage and curetting of tubercular abscesses should only be done when radical treatment is contra-indicated.

12 Double castration should be performed where both glands are diseased, and if there is no evidence of co existing tubercular disease in the genito urinary tract.

13 Whether infected seminal vesicles should be excised along with the epididymis or testis is a moot point. The author favours later removal if necessary.

14 Anti tubercular remedies should be employed in conjunction with surgical measures—(*The Journal of the American Medical Association*, 21st June, 1903).

Internal Hydrocephalus in the Adult, simulating Cerebral Tumour—Dr W B

Warrington relates an instructive case in which cerebral tumour was diagnosed during 14 weeks of observation of a man 39 years of age, whereas the autopsy revealed hydrocephalus resulting from serous meningitis. The following points are considered as aids in differential diagnosis—

1 *Duration*—It is often longer than in tumour, and its progress is marked by intermissions.

2 The skull may be enlarged.

3 Absence of localising symptoms.

If the cranial nerves in the anterior fossa are pressed upon, the resulting paralyses are of a fluctuating character.

4 Slight exophthalmos, fine tremors of tongue, hands and lips, weakness without definite palsy of the legs.

5 Examination of the fluid obtained by lumbar puncture. Cell elements suggest a meningeal origin. Significance of albumen is varied—(*The Medical Press and Circular*, 30th July 1902).

Definition of Progressive Paralysis, its Differentiation from Similar Forms of Disease—By Prof Waldimir Tschisch, of Dorpat.

The writer puts aside the commonly accepted etiological factors of general paralysis of the insane and pins his faith in a specially malignant form of syphilis as the sole cause. But it is not a syphilis such as is commonly observed. It is not a case of focal lesions, of symmetry or asymmetry of the disease in various organs or tissues. It is a peculiar parasymphilitic virus that affects every tissue of the body equally and progressively. Not one organ or tissue is more affected than another during the progress of the disease. Similarly the functions of organs are attacked in equal proportion.

Truly this is a form of syphilis and a form of general paralysis that is *cavere* to alienists that are not Russian, and the writer's paper is far from furnishing convincing proof of its existence—(*The Journal of Mental Pathology*, July 1902).

Left Subphrenic Abscess following Appendectomy—The Boston Medical and Surgical Journal,

17th July, 1902—Dr E A Durling reports the case of a young woman, 21 years of age, who had an attack of appendicitis on 4th September 1901. She was operated on eight days later. The appendix was found embedded in a mass of omentum, small intestine and cæcum. It was gangrenous and perforated, but there was no pus. A fortnight later the wound was opened up, and a pocket of offensive pus was evacuated. The patient left hospital late in October apparently recovered. Soon afterwards she began to experience pain on the left side under the

ribs in the splenic region. On 25th November a lumbar incision was made over the site of bulging and tenderness, and an abscess cavity of some size was found. It was retroperitoneal and occupied the space bounded above and behind by the diaphragm and in front by the peritoneum lying behind the spleen, and below by the left kidney. A sinus persisted. On the 9th February 1902, ten weeks after operation, the patient was anaesthetised for the fourth time, the sinus was dilated, and the remains of the cavity was curetted. She recovered and was discharged cured on the 9th April. Retroperitoneal subphrenic abscess on the left side is not a common sequel to appendicitis. Both intra and retroperitoneal subphrenic abscesses are much more common on the right side, especially in association with appendicitis.

Electro-Thermic Hæmostasis in Abdominal and Pelvic Surgery—By A. J. Downes, A.M., M.D. (*The Journal of the American Medical Association*, 12th July 1902.)

Dr. Downes is an eloquent advocate of electro-thermic hæmostasis in preference to the use of the ligature. He considers it causes less pain, that there is less tendency to the formation of intraperitoneal adhesions, and that there is more chance of eradicating malignant disease, also that it affords a better opportunity of obtaining a bloodless field for operation. He adopts this method for hysterectomy, salpingectomy, ovariectomy and appendectomy, using instruments and apparatus specially devised by himself.

D M M

MEDICINE

The following extract will be of great interest to many of our readers.

The Hæmoleucocytic Curve in Malaria—By A. Billet, M.D., sc.D., Médecin major de 1st classe in the French Army in *C R Section de Méd et Chir Mil XIII*, Int Med Congress. Our observations from the hematological standpoint were made from December 1899 to July 15th, 1900, on twenty cases of malaria, seen among the troops of the Constantine garrison. We may as well state at once that in all we found Laveran's hæmatozoon in its various forms. In these 20 patients we observed 70 attacks of regularly intermittent fever, and made altogether 553 examinations of the blood, which gave the following results—

Chemical type of disease	No of cases	Type of the attack	Total	No of examinations of the blood
		Qd T Qt.		
Acute malarial infection, 1st attack	4	10	10	71
Acute malarial infection, 2nd attack	14	4 21 11	36	305
Chronic malarial infection with hydræmic cachexia	2	8 8 8	24	177

At each examination of the blood a note was made not only of the temperature and phase of the attack, but also of the number of xanthocytes and leucocytes, the form and proportion of these latter, and the nature and number of the parasites observed. We shall here give only the conclusions at which we arrived—

I. In malaria there exists a well defined hæmoleucocytic curve, which has been already alluded to by Kelsch, Dionisi, Bastianelli and Vincent. This curve is always the same in the different types of attack—quotidian, tertian and quartan—but varies according to the phase of the evolution-cycle of the hæmatozoon, and the course of the attack. We have (1) a *premonitory hypoleucocytosis*, whose onset is, as a rule, observed two or three days before the attack, i.e., even before the appearance of the hæmatozoon in the blood, and which, therefore, is certainly of value as a therapeutic indication for the exhibition of quinine if begun at the time of its being observed may abort the attack. This initial hypoleucocytosis is at first slowly progressive, lowering the proportion of leucocytes to xan-

thocytes from the normal mean of 1-500 to 1-600 or 1-800, but as soon as the parasites appear in the peripheral circulation, the proportion becomes rapidly lower, the hypoleucocytosis attaining its apogee at the onset of shivering—at the very moment that the parasites, having attained the highest stage of their development, begin to reproduce themselves asexually. At this period the proportion may be 1-900, 1-1,000 or even lower. In exceptional cases 1-1,500 or 1-1,600 may be observed, indeed we have seen 1-1,860, the total number of leucocytes having fallen to 3,000 or even 2,000 per cubic millimetre. (2) A rapidly rising leucocytic curve whose rise begins during the stage of shivering, and continues during the hot and sweating stages ending in marked *hyperleucocytosis* at the termination of the attack or on the following day—at the beginning of the next attack in cases of quotidian fever. This hyperleucocytosis is at its maximum at the time that the parasites—the result of the segmentation of the rosette—enter the circulation and attack other xanthocytes, being then small amoeboid bodies. The proportion of leucocytes to xanthocytes rises from 1-800 to 1-600, and at the height of the hyperleucocytosis may be 1-300, 1-200, and even, in exceptional cases, 1-100 or 1-90, the total number of leucocytes being also increased, reaching 12,000, 15,000, 20,000 and even 25,000 to 35,000, the normal being 8,000 to 10,000 per cubic millimetre.

II. This hyperleucocytosis is only temporary, the proportion soon falling, and at last causing a hypoleucocytosis, which becomes more and more marked as the time of onset of the cold stage draws near. In quotidian cases extreme hypoleucocytosis is attained in 24 hours, in tertian cases in 48 hours, and in quartan cases in 72 hours. Then after the cold stage, the hæmoleucocytic curve rises again, attaining its maximum hyperleucocytosis at the termination of the attack or on the following day.

III. We have thus in malaria a remarkably regular and constant leucocyte curve, equilibrium being gradually restored, even in the absence of treatment, after a certain number of attacks, on the disappearance from the circulation of the parasites.

IV. In malaria the leucocytosis is always a *mononucleosis*—the mononuclear leucocytes being alone affected. When the polynuclear leucocytes are affected, we may be sure that we have to deal with a complication—an infection by the pneumococcus, a streptococcus, a staphylococcus, or the bacillus coli. This mononucleosis is above all a *lymphocytosis*, i.e., it is characterized by the predominance of the cymphocytes or small opaque cells with a single nucleus, strongly basiphile, and filling nearly the whole cell. The large mononuclear cells of irregular shapes, with almost colourless protoplasm and horse shoe shaped nucleus which stains only slightly are also numerous it is true, but these are—as first pointed out by Metchnikoff—phagocytes containing within their protoplasm melanous particles, which are the debris of malarial parasites. Between the lymphocytes and the large mononuclears, we have all the intermediate forms, of which the neutrophile polynuclears are the least numerous, being in certain cases only 30 or it may be 20 per cent of the total leucocytes. Eosinophile cells are as a rule absent from the circulation during the whole febrile period, re-appearing when the temperature becomes normal. When malarial cachexia is marked, these latter may be greatly increased in number forming 10 or even 20 per cent of the total leucocytes.

V. Just as we have a general leucocyte curve in malaria, we have a *mononuclear leucocyte curve*, which also varies according to the phase by the attack and the stage of development of the parasites. It is an interesting fact that this mononuclear leucocyte curve is almost identical with the general leucocyte curve. In other words, after a slight rise for a few days before the attack, there is a sudden fall during the cold stage and then a rise, the

maximum being reached at the termination of the attack, or in quotidian ague, just before the onset of the next attack. The percentage of mononuclears to the total number of leucocytes rises from 40 during the cold stage to 60, 70, 80 and even higher at the end of the attack, the lymphocytes themselves being from 30 to 50, 60, and even 70 per cent of the total leucocytes.

VI In the treatment of malaria by quinine we have also a leucocyte curve, which is a reproduction and some times an exaggeration of the normal malarial leucocyte curve, consisting as it does of (1) a *quinine hyperleucocytosis*, which occurs within a few—generally three or four—hours after the ingestion of the drug, and (2) a *quinine hyperleucocytosis*, which comes on about ten or twelve hours after the ingestion of the drug, and affects the mononuclears, being often more marked than the ordinary malarial hyperleucocytosis—the proportion of leucocytes to xanthocytes being kept at from 1—300 to 1—100 and sometimes even 1—90, while the total number of leucocytes may exceed 35,000 and even 45,000 per cubic millimetre. This quinine mononucleosis has a curve which is that of ordinary malarial mononucleosis somewhat exaggerated—the mononuclears being 70, 80, and even 90 per cent of the total leucocytes. The quinine hyperleucocytosis differs from the ordinary malarial hyperleucocytosis, in that it continues as long as parasites exist in the blood and quinine is exhibited, the norm being restored *pari passu* with the disappearance of the parasites, as a result of such exhibition.

VII Quinine is then the specific drug for the treatment of malaria, in that it induces mononucleosis which is the special phagocytosis required for this disease.

VIII To sum up the study of the malarial hæmo-leucocytic curve appears to be of much value from the points of view of diagnosis prognosis and treatment.

for in most infectious diseases it is the polymorphonuclears which are affected

W D SUTHERLAND, M B

FOREIGN EXTRACTS

The seat of election for intra-muscular injections—Most of our readers know how painful injections into the substance of the deltoid are, and that injections in the intra scapular region have their inconveniences—so they will be interested in the report of Marato and Charpentier made to the Neurological Society of Paris to the effect that in the buttock there is what they call “the analgesic zone,” in which intra-muscular injections are well borne and easily made. The zone is bounded laterally by lines drawn at 4 cm ($1\frac{1}{2}$ in.) from the sulcus natus, superiorly by a line drawn through the sacro coccygeal articulation, and inferiorly by a line drawn parallel to this through the middle point of the anus. The injections are made with an ordinary Pravaz syringe, the needle being thrust into the buttock forwards and outwards, so that its direction is nearly that of a line drawn from the anus through the buttock to the great trochanter. The patient stands leaning forward, grasping the nates with his hands and separating them, as if he were being examined for piles.

The nature of elephantiasis—Biault, who was recently appointed lecturer on tropical medicine at the Algiers Medical School, in an article in the *Gazette des Hôpitaux Civils et Militaires*, Nos. 53, 54 of 1901, states that in his opinion elephantiasis is due to either a streptococcus, or the filaria, that the lesions are anatomically similar and the treatment of the condition the same, the difficulty lying in an exact diagnosis for the filaria may not be found in the parasitic variety, and the streptococcus is only found in the microbic variety during the exacerbations of the disease.

The Malaria parasite once more—Billet, whose work on the leucocyte curve in malaria is probably known to most of our readers, has an interesting “pre-

liminary note” on malaria at Constantine in the *Annales de l'Institut Pasteur* for March 1902. He studied the evolution of the parasite in the blood of 395 cases, mostly soldiers, and found that first infections are only seen during the summer and autumn, in the winter and spring only relapses occur. Fresh infections are characterised by a fever, which is often irregular, and in many cases of the pernicious type, relapses on the other hand show a classic intermittent, with rigor, heat, and sweating. The fresh infections show the small endoglobular parasite of 1-3 μ diameter, but slightly if at all mobile, and rarely pigmented—the parasite of Italian “æstivo-autumnal” and “tropical” fever in fact, and invariably crescents are formed later, and persist until the month of December. In the relapses (winter and spring) the parasite is large, amoeboid and forms rosettes.

In 20 cases Billet found in the same patient a **transformation of the parasite**. He concludes that there was no fresh infection in these cases, as the second form was found at the time of year in which no primary infections are observed, and he enunciates the opinion that the small “æstivo autumnal” or “tropical” parasites are but the primary form of the parasites of tertian and quartan fevers. The quartan and tertian parasites, then, according to Billet, are only to be distinguished in their secondary forms, especially in regard to their rosette formation, and clinically.

Nothing new under the sun—In the *Archiv f. Schiffs-Tropen-Hygiene*, 6 Bd, Heft 11, J. Kohlbrugge points out that the periodical administration of “full” doses of quinine in malaria is—as Laveran shows—no new thing, and that therefore van der Scheer, Koch and Plehn, who have in recent years written so much regarding this method of treatment, need not strive as to priority of invention, for certainly Sydenham recommended the method.

W D SUTHERLAND, M B

THE TRIENNIAL REPORT ON BOMBAY HOSPITALS, 1901

THIS report, though dated 25th September 1902, only reached us in February 1903. It is the last report on Bombay Hospitals issued by Surgeon General Bainbridge, I M S, now retired. The year 1901, as all know, was one of scarcity and distress in the Bombay Presidency, but except for plague there was a diminished mortality from all the other chief diseases. It is most satisfactory to find that the hospital attendance is now returning to the normal or at least to what it used to be in the comparatively happy days before the invasion of plague. The number of deaths from plague reported to Government in three years were—1899, 119,448, in 1900, 38,495 and in 1901 158,941.

The number of surgical operations performed in the year 1901 reached the total of 63,948, an increase of almost one thousand over those of the previous year. These included 108 extractions of guinea worm, 13 of the jigger flea, 1,050 operations in bones, 642 on joints, 575 amputations, 6 trephimings, 2 mastoid operations, five operations on the spinal column, 931 on the mouth and nasal cavity, and 3,246 eye operations, which included 179 for entropion, only 8 for strabismus, 51 for lachrymal fistula, 709 for cataract. This seems to show that neither squint, nor cataract is especially common in the Bombay side. Of the abdominal operations the most important were 41 abdominal sections, 132 for liver abscess (51 cured, the rest died or “otherwise”), 3 operations on the kidney, 66 for hernia (including 32 for radical cure, 31 being successful). There were no excisions of the appendix, and only 1 operation for perityphlitic abscess. Of rectal operations we find 165 for fistula in ano, a common complaint in India and for piles 225 by ligature, 91 by excision, 9 by cauterization and by incision. The stone operations were as follows—

151 removals of urethral calculi, 9 suprapubic (7 cured), 341 lateral perineals, 13 medians, 7 vaginal, 64 lithotripsy and 773 litholapaxies (32 of which died). For hydrocele we find 186 operations by tapping, 228 treated by injection, 29 by incision, 31 incision with eversion of sac, 24 excision of pre-tertal part of sac. There were also treated 17 hæmatoceles. There were also 360 gynaecological and 302 obstetric operations. The largest numbers of important operations in general surgery were performed by Lieutenant-Colonels Hatch, Caisson, Corkery and Stevenson, Majors Quicke, Street and

Hojel, and Captains Erans and Hooton. For crushing vesical stone Lieutenant-Colonel Hatch did 40, Lieutenant-Colonel Stevenson 215, Lieutenant-Colonel A. V. Anderson 88, Major Street 27, Captain Burnett 213, and Captain H. M. Moore 31 operations, out of a total of 837, and out of 370 lithotomies 27 were performed by Lieutenant-Colonel Dalal, 19 by Captain Burnett, and 53 by the late Assistant Surgeon Aquino. The majority of the abdominal sections and obstetric operations were done by Lieutenant-Colonel Dimmock and by Miss A. M. Benson, M.D., and of 709 extractions of cataract 541 were done by Major Herbert. Assistant-Surgeon Nanavati also did 74 extractions of the lens and this officer and Assistant-Surgeons Anklesaria, Kallianwala and Ghandy each did numerous other operations.

We read that there are four State aided institutions for the treatment of lepers. The Matunga Asylum is well managed and has a successful septic tank installation for its sewage. It is said that though there is no compulsory segregation "many of the inmates stay permanently."

At the three medical schools for hospital assistants 234 pupils were educated, at Poona, Ahmedabad, and Hyderabad. There is no mention in this report of the working of the Medical College at Bombay.

Surgeon General Bainbridge writes as follows —

"It gives me much satisfaction to state that the services rendered by Medical Officers, and especially their professional work, have, for the most part, been excellent. It seems unnecessary to submit a list of all those who deserve commendation, but I wish to bring to the special notice of Government the names of Lieutenant-Colonels Greany, Henderson, Hatch, Carson, Willis, Dimmock, Stevenson and Lyons, of Majors Burke, Quicke, Meyer, Childs, Hojel and J. B. Smith, and of Captains Street and Burnett. And I also beg to mention for their good service and capabilities, the names of Senior Assistant-Surgeon T. D. W. Gillespie, and Assistant-Surgeons W. B. George, H. A. Lafond, H. W. de B. Prescott and A. V. M. King of the Indian Subordinate Medical Department, together with Rao Saheb D. G. Sabnis and Khan Bahadur K. B. Cooper, Civil Surgeons, and Mr. E. Mackenzie (V. H. A. S.), Khan Bahadur F. A. Moos, and Messrs. J. P. Wadia, B. H. Nanavati, N. K. Kalyanvala and M. J. Mistri, Civil Assistant-Surgeons.

Captain J. H. McDonald, I.M.S., has worked hard, and with zeal, as my Personal Assistant.

The report is a record of good medical and surgical work all round.

THE BOMBAY MEDICAL AND PHYSICAL SOCIETY

THE August number of the *Transactions of the Bombay Medical and Physical Society* contain many articles of interest and value. We reproduce in *extenso* in another column Captain E. D. W. Grieg's article on "Ehrlich's Theory of Immunity," as it is a clear summary of a difficult subject.

Among other articles is one by Dr. N. F. Surveyor on a rare sequela of snake-bite *viz.*, loss of the toes from sloughing and consequent amputation. Major W. H. Quicke, I.M.S., F.R.C.S., contributes notes on a number of surgical cases, one of the most remarkable being a "congenital enlargement of the penis caused by an obstruction of a fold of mucous membrane of the urethra and contraction of the terminal part of the urethra."

Another remarkable case was a "rupture of the liver without serious symptoms," death on 12th day from recurrent hemorrhage and rupture of a hematoma on the surface of the right lobe of the liver.

A paper by Dr. S. K. Nariman on "A disease which has recently appeared in Bombay" gave rise to an animated discussion, in which Dr. Surveyor, Dr. Powell and Major Childs took part. The symptoms as recorded by Dr. Nariman are as follows —

- Swelling of feet and legs, in some cases the swelling was very little and evanescent, but in the majority the feet and legs were considerably enlarged, and oedematous with red and shining appearance of the skin. In some the oedema extended to the thighs, in one case the oedema was most marked on buttocks and hips, in another on the lower part of the sternum. In some cases the oedema was also noticed on the face below the lower eyelids. I was informed that in several cases the oedema was first noticed on the shin and ankle about the malleoli and was evanescent. Day by day it increased and became permanent.
- Those with marked oedema complained of tingling and formication in the affected parts. One with oedema on the face complained of burning pain and feeling of constriction. In some cases petechiae, streaks and discolorations were noticeable.
- All complained of unusual fatigue and weakness in the legs, especially towards evening. There was no pain on touching or slightly pressing the skin, but on

deep pressure as while rubbing some oil the parts were painful. The pain was most marked on pressing the calf muscles.

- All the patients felt out of sorts, and there was loss of appetite. Four of them had in the beginning considerable abdominal pain and diarrhoea, in these cases the oedema was much less.
- Three cases complained of precordial pain, chest oppression, palpitation and dyspnoea, one case had also orthopnoea.
- None of the cases had any fever when I saw them, and I was told throughout the disease there had not been any fever.
- Urine was examined in well marked cases. It was of high colour and high specific gravity, but contained no albumen.

The diagnosis lay between Epidemic Dropsy and Beri beri, but we have little hesitation in considering them from the accounts given, to be cases of Epidemic Dropsy, the occurrence of which in Calcutta and in Madras in 1901 we have already chronicled. At the same time we may give Dr. Surveyor's account of the blood examination in one of these cases —

"Date of examination	1-8-02	21-8-02
Red blood corpuscles per 1 c m m	2640000	3200000
Hæmoglobin percent	80	30
Hæmoglobin richness of each R B C	0.6	0.5
Hæmatocrite percent of R B C	25	32
	mts sec	mts sec.
Coagulation time	4 15	3 30

Ratio of the different varieties of Leucocytes

Date of examination	1-8-02	21-8-02
Polymorphic cells	58.4	45.8
Eosinophile cells	0.5	1.0
Large Hyaline cells	4.5	13.2
Lymphocytes	36.6	40.0

Major C. H. L. Meyer, M.D., I.M.S., reports an unusual case of malaria in a Goanese cook in the J. I. Hospital. He sums up the remarkable features in the case as follows —

"The parasite in this case is, I think, undoubtedly of the malignant variety, and in support of this statement are the following facts — (a) The finding of crescents and crescent-like bodies. The paucity of gametocytes is accounted for by the short duration of the fever (barely 8 days). (b) The character of the sporulation in the ante mortem blood film which was quite unlike that of the quartan or benign tertian parasites, but quite consistent with the appearances given by the malignant variety. (c) The absence in the ante mortem blood films of any forms except very young amoebulae and sporulating forms, *i.e.*, no parasites of an intermediate age could be found. (d) The hæmoglobin in the red corpuscles was unaltered and these bodies were normal or slightly reduced in size and some times "brassy". (e) In sporulating forms in the ante mortem blood specimens the parasite usually occupied only one half or three quarters of the corpuscle and the unoccupied part of the latter presented the normal appearance of a red corpuscle. (f) The number of spores in the ante mortem specimens varied from 7 to 11, they were very small (smaller than benign tertian or quartan spores) and not grouped in any regular "daisy" or "sunflower" arrangement. (g) The unperiodic character of the fever the patient suffered from, the absence of distinct rigors and the severe toxic effects also point to a malignant infection. There are two facts which are against the above conclusion. (1) The young parasites in the ante mortem films here and there showed a slightly sprawling and rather abundant protoplasm, appearances which are more characteristic of benign than malignant parasites. (2) The sporulation of the parasite as seen, especially in the post-mortem brain and bone marrow films. Here the spores numbered from 15 to 30, the average being about 20, they were very small, rounded, showed with beautiful clearness and were grouped around the centrally or laterally massed blackish pigment. Dr. Manson in "Tropical Diseases" (and others elsewhere) give the number of spores in the malignant parasite as 6 to 8, or 7 to 12—rarely 15 or 16. My case, therefore, if malignant, is peculiar, and we must explain the appearances (a) either by assuming we had benign infection as well as malignant (the facts as I have shown are all against this), or (b) that we are dealing here with an unrecognised variety of malignant parasite, or (c) that post-mortem conditions (the post-mortem was made 14 hours after death) had modified the character of the sporulation."

Dr. R. Row has a valuable paper on "precipitation on plague sera," which, however, is too long and technical to be abstracted here, therefore we only quote his summary and conclusions —

"From the results I have been able to obtain I learn the following —

A. It appears that during the successful struggle through a plague infection man and animals, like the rabbit and the horse,

develop at least two distinct and different bodies which become demonstrable in their blood serum (1) a body which is Bactericidal or Bacterio-inhibitory, (2) a body of the nature of Precipitin or Agglutinin

B In man's blood serum the Bacterio-inhibitory substance seems to be by far the most constant body during his convalescence from plague as demonstrated by me elsewhere.¹ Only in one case have I been able to demonstrate the presence of Precipitin of any marked potency (out of 11 cases examined), while out of over 70 undoubted cases of plague I have not failed to demonstrate the presence of Bacterio-inhibitory substance

C In the blood serum of rabbits at first Haffkissed or protected otherwise and then infected with plague, the Bacterio-inhibitory substance is conspicuous by its absence, while Precipitin is the most constant and predominant body. The reaction of precipitation is very rapid. The same remarks apply to Roux's serum from the *Hoïse*

D In man where Bactericidin seems to be the rule, Precipitin is only an exception—and even when this is present, it is feeble than in animals and is present in the early part of convalescence only

E In all the cases I have examined (except in one, and that, too, in the early convalescent stage) I have not found the presence of both these bodies together—each body appears to play an independent rôle

F In dying cases of plague the Precipitin as well as the Bacterio-inhibitory substance are not demonstrable

G The less constant and almost exceptional presence of Precipitins in human plague convalescents' blood serum may mean the subordinate rôle which Precipitins play in the presence of Bactericidin—and probably the scarcity of Precipitins in human plague convalescents' blood serums may account for the general failure in demonstrating the precipitation phenomenon. Owing to these considerations the Drop culture method described by me elsewhere² is a far more reliable method for diagnostic purposes and is therefore preferable to precipitation method for testing human serums, while for the serums of the rabbit and the horse immunised against plague, the precipitation method is preferable

H Owing to the poverty of 'Bactericidin,' in spite of the preponderance of Precipitin in the sera of the immunised horse and the rabbit, I may be permitted to explain their unsatisfactory therapeutic effect, and this particularly when the serum is administered subcutaneously and given to cases at an advanced stage of the disease

I A comparison of Lustig's serum and Roux's serum is interesting, inasmuch as the former shows neither Bactericidin nor Precipitin, while the latter (viz., Roux's serum from Paris) is rich in Precipitin, but contains only small amounts of Bactericidin

REFERENCES

- ¹ This Journal, April 1902
- ² *Lancet*, p. 456 of 16th February 1901

Service Notes

In addition to the forty five names given in our January number, lives of the following fourteen men are also to be found in the *Dictionary of National Biography*—

- | | | |
|-----|----|---|
| VOL | 1 | ANDERSON, JAMES (Madras 1765-1809), unsigned |
| " | 1 | ANDERSON, THOMAS (Bengal, 1854-1870), by James Britton |
| " | 2 | BAIRD, WILLIAM (Madras) by R. E. Thomson |
| " | 7 | BROWN, SAMUEL (Madras, circa 1690), by B. D. Jackson |
| " | 17 | EGERTON, CHARLES CHANDLER, (Bengal, 1823-1847), by John Dixon |
| " | 20 | FULLARTON, JOHN (Bengal, 1802-1812), by L. C. Sanders |
| " | 21 | GERRARD, JAMES GILBERT (Bengal, 1814-1835), by H. M. Chichester |
| " | 21 | GBBON, ALEXANDER (Bombay, 1825-1860), by B. D. Jackson |
| " | 21 | GIRAUD, HERBERT JOHN (Bombay, 1842-1867), by G. T. Beltany |
| " | 25 | HARWOOD, SIR BUSSIOK (Bengal, 1764-1778), by G. T. Beltany |
| " | 29 | JAMESON, WILLIAM (Bengal, 1838-1875), by B. D. Jackson |
| " | 30 | JOHNSON, DANIEL (Bengal, 1789-1809), by M. G. Watkins |
| " | 35 | MACNELL, SIR JOHN, G. C. B., P. C. (Bombay, 1816-1836), by H. M. Chichester |
| " | 51 | SCOTT, HELENUS (Bombay, circa 1785-1815), by Norman Moore |

It will be noticed that men who have distinguished themselves scientifically, as Botanists, Geologists, &c., especially the former, are very fully represented. Those who have made a name as Oriental scholars are also well to the fore, men distinguished for political services in modern times also

appear in the Dictionary, but those whose reputation rests upon professional work, such as Norman Chevers and the Gooderes, are conspicuous by their absence. It certainly seems singular that, while these officers, as well as the far more famous Gabriel Boughton and William Hamilton, receive no mention, such as a very shadowy personage as Samuel Brown, about whom the only thing known seems to be that he sent home some plants from Madras, and a man of so little importance as Daniel Johnson, whose fame rests solely on the authorship of "Sketches of Indian Field Sports," should receive recognition

Two other officers of the Bengal Service are barely mentioned in the biographies of their more famous sons, Kenneth Murchison (1776-1781), in the life of Sir Roderick Murchison, and George Playfair (1805-1843), under Lyon Playfair, Baron Playfair

Several other medical men, who have served the East India Company in various capacities, but whose names do not appear in the lists of the Indian Medical Service, also find a place in the Dictionary

MUNGO PARK, the famous African explorer, served as Surgeon to the "Worcester" East Indiaman in 1792-93

NEIL ARNOTT, Physician, Inventor, Fellow of the Royal Society, and Physician to the Queen, served as Surgeon to an East Indiaman, on two voyages to China, in 1807-1811

JAMES SPENCE, afterwards Professor of Surgery at Edinburgh, made two voyages in the same capacity, in 1833-34

THOMAS HORSFIELD, an American by birth, served first the Dutch, and afterwards the English Company, in Java, from 1800-1816, and afterwards was Keeper of the Company's Museum in London from 1818 till his death in 1859

JOSEPH ARNOLD, Surgeon in the Navy from 1808 to 1815, served the Company in Java from 1816 till his death in 1818

THOMAS CHRISTIE, Medical Officer to the Company in Ceylon from 1797 to 1810

THOMAS RICHARDSON COLLEDGE, served at Canton and Macao, on the Company's China establishment, from 1831 to 1841, founded the Medical Missionary Society of China in 1837

SIR JAMES MCGRIGOR, afterwards the famous Director General of the Army Medical Department, was serving with the 88th Foot in India in 1801, when he was appointed Superintending Surgeon of the expedition from India to Egypt, under Sir David Baird, in 1801. He received a commission as Superintending Surgeon from the Company also for this expedition

ROBERT LEE, the well known obstetric Physician to St. George's Hospital, was appointed to the I. M. S. in 1822, but never joined

SIR PAUL JODRELL, Physician to the London Hospital, resigned that appointment in 1787, to go to India as Physician to the Nawab of Arcot. He died at Madras on 6th August 1803

CHARLES MACLEAN, after serving as Surgeon to the "William Pitt," "Northumberland" and "Haughton" East Indiamen, is said to have been in charge of a hospital in Calcutta from 1792 to 1797, after which he served at Batavia and Bencoolen. His name, however, does not appear in Dodwell and Miles' list of the Bengal Medical Service. In 1798 he was deported by order of Wellesley, the Governor General, for scurrilous writing in the press. In 1804 he got a commission in the Army Medical Department, but deserted and was advertised as a deserter in the *Hue and Cry*. Much seems to have been forgiven him, for about 1809 or 1810 he was appointed Lecturer to the East India Company, in London, on Diseases of Hot Climates, and after travelling in the East in 1815-1817, was again lecturing in 1818. He died about 1824

CHALMERS' Biographical Dictionary, published in London in 1816-17, in 32 volumes, contains notices of two Indian medical officers, Holwell and Patrick Russell

Retired Officers of the I. M. S.

The Indian Army List of 1st January 1903 contains the names of no less than 29 retired officers of the Bengal Medical Service, whose first commissions are dated more than half a century ago. Of these, two at least were dead, though their names had not yet been struck off. H. M. Macpherson (died 4th April 1902), and F. Turnbull (died 7th March 1902), and I believe a third also, Robert Nichol, died on 13th October 1873, nearly thirty years ago. The senior officer living at the end

of 1902, William Shillits, died on 5th January 1903. The twenty nine officers who entered the service prior to 1853 are —

Rank	Name	Date of entry	Date of retirement
Surgn Maj	William Shillits	7th July 1838	23rd July 1863
D I G	A C Macrae	24th Jan 1839	28 Jan 1865
"	T C Hutchison	16 Oct 1839	3rd Jan 1866
Surgn Maj	John Campbell, C B	22nd Dec 1840	24th Sept 1864
Surgeon	J R Withecombe	15th Feb 1842	10th July 1859
T G	H M Macpherson	18th Sept 1842	16th Mar 1870
Surgn Maj	Charles Hathaway	10th Aug 1843	14th Feb 1866
"	W F Mactier	3rd Dec 1844	21st Sept. 1866
"	F Turnbull	11th Feb 1845	11th Dec. 1872
S G	J P Walker	5th April 1845	26th June 1877
Surgn Maj	John Squire	30th April 1845	28th Dec 1871
"	Thomas Maxwell	26th Jan 1846	23rd Jan 1868
"	C K Webb	1st July 1846	7th Jan 1871
"	J B S Browne	20th Oct. 1846	9th Aug 1881
Surgeon	D H Small	21st Nov 1846	1st Jan 1866
S G	G H Ray	3rd Jan 1847	17th Dec 1879
Asst. Surgn	Robert Nichol	20th Jan 1847	5th Jan 1854
S G	A J Payne	20th Dec 1848	1st Feb 885
Surgeon	Robert Parker	1st Jan 1849	24th June 1865
S G	Sir Joseph Fayrer, Bart, K C S I	29th June 1850	1st Dec 1874
R S	J B Sorvan	20th Nov 1850	13th June 1881
D S G	Edward McKellar	9th July 1851	31st Mar 1877
S G	Sir A C C DeRenzy, K C B	29th Jan 1851	9th Dec 1882
"	Sir Alex Christison, Bart.	20th Oct. 1851	24th Nov 1882
"	J M Cunningham, C S I	20th Nov 1851	31st Mar 1885
D S G	J C Corby	24th Nov 1851	1st Jan 1879
S G	W B Beaton	30th June 1852	20th Dec 1852
Asst. Surgn	E D Silver	20th July 1852	23rd Aug 1858
D S G	C T Paske	26th Aug 1852	1st Jan 1879

Owing to the system of giving an Honorary step in retirement most of these officers are shown as holding a rank higher than that they actually held on retirement. The only one who attained the substantive rank of Surgeon General was J M Cunningham.

The oldest officers on the Madras Retired List are the following —

Surgeon	John Colebrook	Retired	11th May 1863
"	James Macdonald	"	1st Aug 1872
D S G	F L Clementson	"	31st Dec 1873
Surgn Major	A C Macleod	"	26th Feb 1874
"	J G Gibbs	"	18th Nov 1874
"	S V Heard	"	1st Dec. 1874
S G	H Young	"	20th Nov 1875
Surgn Major	G Marr	"	31st March 1876
D S G	J L Paul	"	11th Nov 1876
"	J A Cox	"	1st March 1877

BOMBAY has no less than eighteen medical officers as compared to ten in Madras, who have been on the retired list for over a quarter of a century

Asst. Surgn	Henry Room	Retired	24th Oct. 1880
Surgn Major	R Dent	"	28th Nov 1862
Surgeon	J Reynolds	"	31st Dec 1862
Asst. Surgn	A Kelsey	"	12th April 1863
Surgeon	H Wilson	"	12th Oct 1864
"	J M Milford	"	14th August 1868
D S G	J Mills	"	1st Jan 1870
I G	T W Ward	"	2nd Oct 1871
D S G	J F Shokelton	"	7th Jan 1873
Surgn Major	F S Stedman	"	10th Nov 1873
D S G	Jas Gilbert	"	22th April 1874
Surgn Major	F H Plumtree	"	26th May 1874
Surgeon	John Roche	"	13th Oct. 1874
"	A. R. Cowell	"	7th March 1875
D S G	J H Sylvestre	"	10th Sept 1875
Surgn Major	R. Byramjee	"	6th Oct. 1875
"	E R Butler	"	1st April 1877
S G	W Thom	"	15th Sept. 1877

For the above we are, of course, indebted to Lieutenant-Colonel D G Crawford I M S, now at home on furlough

We quote the following from the Minute by Sir J Outram, dated 2nd January 1860 on the Indian Medical Service, we take it from *Physician and Friend* already reviewed —

"67 There is one class of officers in respect of whom I would fain make a special appeal on this score, as they are a class which, to our disgrace be it said has been treated with singular harshness and illiberality alike by their military and civil superiors. I allude to the officers of the Medical Department a body of men who not only are unsurpassed by any other body in the Service for professional zeal and skill, gallantry and devotion to their duties, but have

specially distinguished themselves by the success with which they have cultivated general science, and the earnestness with which they have applied themselves to the promotion of education and other philanthropic objects. These men, specially those of the Bombay establishment have been treated by us with such unfairness that a late Physician General of that Presidency a man whose name is held with honor both in and out of his profession—I allude to Dr. M'Laren—felt himself authorised to assure the late Lord Frederick FitzClarence that had any officer treated his dog boy in the manner in which the Court of Directors and Board of Control have treated the Medical Service he would have been brought to a Court-Martial, and cashiered for his honourable breach of faith. The Physician General's illustration was a strong one but after explanation, its justice was admitted by that Commander in Chief, who thenceforth felt as warmly on the subject as the head of the Medical Department.

"68 In behalf of this noble and ill used Service Lord Dalhousie made a generous interposition and, though His Lordship's efforts were at the time unsuccessful, his appeal was so forcible and his general views have been so earnestly and ably supported by Lord Canning, that justice cannot long be denied them if the Army of India be kept a *Loca lone*, but to the Medical Service amalgamation would be ruinous.

"69 Than Dr. Alexander the Director General of Her Majesty's Military Medical Service. I am assured that no worthier or more honorable man exists but he is only a man of finite knowledge and human feelings. He knows the officers of his own Service he knows that many of them are eminently deserving of that promotion which at present it is not in his power to bestow, but for which amalgamation would afford an opportunity. And, not knowing the men in the Local Army, his partialities would needs be in favor of the men of his own Service to an extent that would prove ruinous to the just claims of the medical officers of the Local Service. And even if he should deem it his duty, on the first opportunity, to promote to the higher grades those medical officers the seniority rules of whose Service prevented their obtaining promotion for the same services as secured promotion for their more fortunate brethren of the Royal Army, the very number of promotions that have recently been made to the grade of Deputy Inspector in the Royal Service would for a considerable length of time prevent him doing justice to those of the Local Service whose names had been honorably mentioned by the various Generals commanding in the Field and ere these arrears of promotion were disposed of, the claims of those, in whom as members of his own Service he naturally feels more interested would have again accumulated and pressed for favorable notice."

From the Appendix to the Minute

"The boon I crave for the Medical Service are, in my opinion, but a small instalment of what is due to a body of highly educated and accomplished English gentlemen, distinguished for their devotion to their duty their philanthropic zeal, and their high moral character—a body of men to whom almost every member of the Civil and Military Service is indebted for his own life saved or his health restored, or for like blessings bestowed on those most near and dear to him. I regard our treatment of the Indian Medical Service as regards 'relative rank,' its pay rules, the distribution to it of its honors, and its exclusion from the Political and Administrative Department as unworthy alike of our age and nation. But in now proposing to open up freely to that body the Civil Political, and Miscellaneous offices of the State, I do so exclusively on considerations of State policy.

"The preliminary education of medical men places them on a level, in respect of intellectual accomplishments, with the average of those with whom it is our good fortune to recruit our covenanted Civil Service and above the average of our purely military officers and their profession and education gives them special qualifications for aiding in developing the resources of the country and in ameliorating the condition of its inhabitants. They are necessarily acquainted, to a greater or less extent, with Geology, Botany, and other branches of Natural History. To their researches do we owe most, if not all the economic discoveries in Natural History by which the East has of late years enriched the industrial resources of the world. And it is superfluous to indicate the many benefits which a knowledge of Natural History will enable a district officer to confer on the people of his district. As superfluous is it to dwell on the vast importance to the people of this country, amongst whom one overworked civil surgeon can rarely travel, that their district officers should have that knowledge of the laws of health and of practical sanitary economics which is demanded of every candidate for a Medical Diploma. The knowledge of Medical Jurisprudence possessed by every medical man, would be of incalculable value to district officers in the detection and prevention of crime, enabling them to arrive at definite and correct conclusions in very many cases wherein from want of such knowledge doubt must under existing arrange-

ments necessarily exist in their minds to the detriment of the interests of justice, and, as in the case of the doubtfully insane, to the danger of life and property, and the prolonged sufferings of the helpless. And, to conclude a series of illustrations which might easily multiply, I need but glance at the boon that would be afforded to the villages in the more remote parts of the country by the occasional passage amongst them of gentlemen competent to afford them medical aid—to give sight to the blind, hearing to the deaf, and ease to the suffering—who but for the advent amongst them (for magisterial and fiscal purposes) of a kind physician, skilled their wounds to heal, might for ever seek relief in vain from the local native practitioner.

"Believing as I do that medical officers are admirably qualified for civil executive duties, and that their extensive employment in such duties would be advantageous to the material and social interests of the people, I am not less satisfied that it would tend to the elevation and improvement of the Medical Service itself. In the medical, as in all professions, there are "round" men whom a mistake on their own parts, or an ill-judged selection on the part of their parents or guardians, have thrust into "square holes" men who, with little natural taste or aptitude for the healing art, have high qualifications for the performance of other duties and it is, I conceive, eminently desirable that men of this description should not only be permitted, but invited, to transfer themselves from an uncongenial sphere to a congenial one. Such a transposition is effected in England by the existing arrangements and demands of Society in India it can only be effected through the interposition of Government. And by encouraging it the Indian Government would not only strengthen their civil establishment, but greatly add to the professional prestige of their Medical Corps. Would it have promoted the welfare of the sick, the political interests of England, or the reputation of the Indian Medical Service, had Sir John McNeill been compelled to remain in medical charge of a zillah instead of representing his country in Persia, or had Dr Lord been kept attached to a regiment of Native Infantry? Were the years during which Horace Hayman Wilson was condemned to feel pulses and examine tongues (because he was an 'Assistant-Surgeon') considered as profitably to himself, his patients, or the world at large as they would have been had his marvellous philological genius been provided with the full scope and free development that a Professorship would have afforded? Did not the public voice of England justly ridicule and condemn the persistent confinement to professional duties of the accomplished brother of Sir Alexander Burns who, but for the real experience of our Service, might have achieved a name as great as that bequeathed by his illustrious relative? Not five years have elapsed since very cutting strictures were made in the medical periodicals on the regulations which compelled Lord Elphinstone—whose constant and anxious efforts it is to put 'the right man in the right place'—to keep Liebig in charge of a native hospital, and the son of the ornithologist Gould—a man hardly less versed in Ornithology than his father—in medical charge of a Government steamer, principally employed in conveying troops and commissariat stores between Bombay and Karachi.

"By admitting medical officers to civil and miscellaneous posts as freely as our military officers no additional cost would be incurred, and no embarrassment would be occasioned to the operations of the Medical Department. For when it became known that, through that Department, the general service of the State could be entered, and that, by the elimination from its effective strength of officers having administrative tastes and aptitudes, departmental promotion was accelerated, we should not only find an abundance of candidates presenting themselves at the competitive examinations in London, but candidates of even a higher calibre than those we now secure. For, seldom as I look into medical periodicals, I am well aware that the gentlemen now in our Service do not send home encouraging reports of the manner in which we treat them. And at the recent competitions in London, but forty three competitors appeared for upwards of fifty appointments. By opening to them the posts I have named, and treating them in reference to promotion, in the same spirit of liberality as the medical officers of the Royal Army have been treated, we should make the Local Medical Service as popular and as highly esteemed as the Local Military Service.

CAPTAIN W LETHBRIDGE, M B, I M S, who has recently returned from furlough, is posted to the Foreign Department, a vacancy having occurred for a Madras officer owing to the appointment of Captain Armstrong, I M S, as Viceoy's Surgeon.

LIEUTENANT COLONEL J G FULLERTON, I M S, A M O, in Baluchistan, is granted three months' privilege leave and furlough for one year and three days, under the 1868 rules, from 25th March.

CAPTAIN J W GRANT, I M S, is granted leave for 13½ months from 1st March.

We note that in the notification of the last batch of I M S officers they are stated to have "completed a course of instruction at the Medical Staff College," as a matter of fact they were at Netley. It is satisfactory to see that their commissions are dated 1st September, the "day on which they entered the M S College."

It would be an act of grace to restore the lost four months' service to the many batches of men who were deprived of it by A M S agitation during the past ten years.

CAPTAIN W E McKECHNIE, I M S, was recently appointed Special Plague Medical Officer at Jubbulpore.

CAPTAIN CRUDDAS, I M S, is appointed to the medical charge of 6th P I, Capt. H Earle, I M S, to that of 20th P I, Capt Pearson, I M S, to 46th P I, and Capt King, I M S, to 47th P I.

THE following officers have passed the L S examination in Urdu—

Captain D McCay, I M S, Lieut J E Clements, I M S, Lieutenant H H G Knapp, I M S, Lieutenant A. W Overbeck-Wright, I M S, Lieutenant R E Lloyd, I M S, and Lieutenant F McLennan, I M S.

CAPTAIN W S WILLMORE, I M S, is granted leave home for one year.

LIEUTENANT W D RITCHIE, I M S, is granted three months' leave (m c).

SENIOR ASSISTANT SURGEON AND HONY CAPT W R MOARDLE, I S M D, is granted six months' leave (m c).

CAPTAIN J E UTRICAN, M D, I M S, is permitted to return to duty.

A BENGALI paper recently has endeavoured to show that the Black Hole of Calcutta episode is a myth, in spite of the fact that Dr Holwell, one of the survivors, erected the monument (of which we gave a picture in our January number) to the memory of his fellow sufferers.

LIEUTENANT J MCPHERSON, I M S, and Captain J W Watson are both gazetted as having acted as Residency Surgeons at Baroda for short periods, and Lieutenant L P Farrell, I M S, was appointed Residency Surgeon from 2nd March, in addition to his duties as Medical Officer, 19th Bombay Infantry.

LIEUTENANT C B MCCONOGHY, I M S, acted for a short period as Civil Surgeon of Karachi.

LIEUTENANT COLONEL J P BARRY, I M S, has reported his arrival in London.

THE following I M S officers have got extensions of furlough—Lieutenant Colonel W A Lee, I M S, for two months and six days, Captain W C H Foster, I M S, for four months (m c), and Lieutenant L J M Dias, for three and a half months (m c).

THE services of Captain E J O'Meara, I M S, are placed temporarily at the disposal of the U P and O Government, and those of Major G B French, I M S, permanently at the disposal of the same Government.

CAPTAIN T B KELLY, F R C S (Ed), I M S, reverts from Civil to Military employ at his own request, and is posted to the Goorkha Regiment at Landsdowne.

CAPTAIN R. F. STANDAGE, I M S, is confirmed as an Agency Surgeon, 2nd class, from 5th January 1903.

THE services of Captain P More, I M S, are placed permanently at the disposal of the Punjab.

LIEUTENANT COLONEL D P MACDONALD, I M S, went on six months' leave in March preparatory to retirement. Lieutenant Colonel Macdonald entered the service in April 1873, and consequently retires on full pension, and we understand that he will also get the extra pension of £100 a year.

D P Macdonald served for many years in a Goorkha Regiment, he saw service in the Jowaki Expedition of 1877-78, the Afghan War of 1878-79-80, and the Chin Lushai Expedition of 1889-90. Shortly after his return from the Lushai Expedition he was sent as Senior Medical Officer to the Andamans, where he had an up hill fight in effecting many improve-

ments, much needed, in the sanitary state of the barracks and jails of the Penal Settlement. On his return he was appointed Medical Store keeper to Government, Bengal, and on his return from furlough went temporarily to complete his service to Mian Mir.

In the retirement of Lieutenant-Colonel D P Macdonald just on the eve of promotion, the I M S loses one of its most popular members.

CAPTAIN EARLE, I M S, has been posted to the Medical Charge of 20th Punjab Infantry, Captain King, I M S, to the 47th Punjab Infantry, Captain Tate, I M S, to 2nd Punjab Cavalry, Captain Cruddas, I M S, to 6th Punjab Infantry, and Captain Pearson, I M S, to 46th Punjab Infantry.

CAPTAIN F WALL, I M S, is granted six months' extension of leave (m c).

LIEUTENANT GOOD, I M S, on return from China, takes medical charge of 16th Madras Infantry.

CAPTAIN G MCT O SMITH, I M S, is appointed Civil Surgeon of Karnal vice Major P W O'Gorman, M D, I M S.

MAJOR P W O'GORMAN, M D, D P H, I M S, again becomes Medical Store keeper to Government, at Mian Mir vice Lieutenant-Colonel D P Macdonald, I M S, granted extraordinary leave to England.

MAJOR W MOLESWORTH, I M S, has got ten months' combined leave to England.

CAPTAIN T H SYMONS, I M S, has been granted three months' privilege leave from 14th April.

CAPTAIN R K MITTER, I M S, has got three months' privilege leave from 1st April.

CAPTAIN C H LEE T PALK, I M S, is appointed Superintendent of the Madras Lunatic Asylum from 7th November 1902, "without prejudice to the acting appointments since held by him."

AFTER a long tour of service and many extensions Honorary Major Hill, Assistant Secretary to the P M O, H M's Forces in India retires, and his place is taken by Honorary Lieutenant A D McIntyre. Major Hill is well known to generations of Medical Officers in military employ and is generally reported to be the author of that wonderful volume, I A R., Vol VI.

MAJOR P HEHIR, I M S, becomes Civil Surgeon of Manipal in addition to his military duties.

CAPTAIN J MULVANY, I M S, is confirmed in the appointment of Superintendent, Presidency Jail, Calcutta and Captain J M Woolley, I M S, as Superintendent of the Bhagalpore Central Jail.

THE post of Sanitary Commissioner, Bengal, has been given to Major J C Clarkson, I M S.

CAPTAIN B H DEARE, I M S, who resigned the Sanitary Commissionership at his own request (he having been appointed to it during his absence on leave out of India) returns to the general line, and is posted to Rampore Baulia as Civil Surgeon, and Superintendent of the Central Jail there.

MAJOR J G JORDAN, I M S, is transferred from Rampore Baulia to Chittagong.

MAJOR H J DYSON, F R O S, I M S, on furlough, is posted on paper to be Civil Surgeon of Jessore.

LIEUTENANT COLONEL T GRAINGER, I M S, reported his departure on furlough on 7th February 1903. He was one of the many officers recalled during the China Crisis in 1900 because the Military authorities were determined to have no repetition of the Bloomfontein typhoid episode during the China War.

CAPTAIN R. P WILSON, I M S, who has joined Bengal for civil employ, is sent on special plague duty to Patna.

CAPTAIN E T F BIRRELL, R A M C, is appointed Personal Assistant to the P M O, Bengal Command, vice Captain J M Buist, R A M C, gone to England.

CAPTAIN C Y C HUNTER, I M S, is appointed to the medical charge of 3rd Brahman Infantry.

ASSISTANT SURGEON B K BASU, M B, is appointed to the officiating medical charge of the Banda District, U P.

CAPTAIN G T BIRDWOOD, I M S, is appointed a Civil Surgeon 2nd class, as also is Major G B French, I M S, on the promotion of Lieutenant-Colonel J F MacLaren, I M S, to the grade of 1st class.

The following promotions were gazetted on March 7th, 1903 —

Captains to be Majors, I M S

The 31st January 1903

James Muir Crawford, M B
Bawa Jiwan Singh
Charles Henry James
Frederick O Knealy
Arthur William Tremphere Buist, M B
Ernest Gerald Robert Whitcombe
Baman Das Basu

Lieutenants to be Captains, I M S

The 27th January 1903

Archibald Currie MacGilchrist, M B
John Wallace Dick Megaw, M B
Edward Owen Thurston, M B
George Browne
Cecil Maurice Goodbody
Robert Steen, M B
Frederic Fenn Elwes, M B
Ian Lamont MacInnes, M B
Ernest Albert Churchward Matthews, M B
Liesel Philip Stephen, M B
Leonard Gilbert M B
Thomas George Nesbitt Stokes, M B
Harry Malcolm Mackenzie, M B
Michael Harris Thonely
Francis Victor Owen Beit, M B
William O Sullivan Murphy, M B
Matthew Corry, M B
Cecil Charles Murison
Herbert Armstrong Williams, M B, D S O
William Christopher Long
George Clifton Beamish

MAJOR A J MACNAB, I M S, F R O S, took charge of the Civil Medical duties of Mardan, relieving Captain, H M Cruddas, I M S, on 21st February.

THE new regulations for the strength of the military establishment of the hospital assistant branch of the Indian Subordinate Medical Department are published in Army Circular dated 1st January 1903 page 35 clause 16. The total strength is fixed at 861, viz, 555 for Punjab and Bengal, 137 for Madras, and 169 for Bombay Commands.

THE services of Captain L Gilbert, M B, I M S, are placed temporarily at the disposal of the Government of Burma.

THE services of Captain W G Richards, I M S, are placed temporarily at the disposal of Madras and those of Captain W E McKenchie, M B, I M S, at the disposal of the Central Provinces.

THE services of Lieutenant Colonel T J H Wilkins, I M S, are replaced temporarily at the disposal of H E the Commander in Chief.

Notice

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Original Articles.

VESICAL CALCULUS

(READ BEFORE THE NORFOLK BRANCH OF THE
BRITISH MEDICAL ASSOCIATION)

BY W. K. HAICH, FRCS,

LIEUT. COL., I.M.S.

MY experience of stone in the bladder has been gained in Bombay, chiefly in the Sir Jamsetji's Hospital, a large general hospital with a medical school attached. Although calculus is not very common in that city among the residents, there are districts not far off where it is frequently met with, and these feed the Bombay hospitals. All along the coast the climate is damp and muggy, the usual day temperature being 84 Fahrenheit, the nights are seldom cold, and but little clothing is worn. Except in Bombay, where the water-supply is excellent, drinking water is chiefly taken from wells, but the villager is really not very particular as to what water he drinks, the water is usually soft. Further away from Bombay, above the hills or ghats, the climate is much drier, the water more scanty, and agriculture is carried on partly by irrigation from wells and partly by the rainfall, but near Bombay the abundant fall of 80—100 inches in the rainy season is sufficient for the rice crops. From the former localities, near Poona and Nasik, a number of stone cases still come, and I need hardly say the country patients are far superior for treatment to those who have resided in the relaxing climate of Bombay, in over-crowded localities and in houses which are filthy and badly ventilated. Hence the mortality percentage of my cases is certainly not as good as that of up-country surgeons, who have agricultural patients chiefly. I cannot therefore astonish you by the small mortality among my cases, but shall briefly compare the mortalities of the different operations after I have said something as to the treatment which I think preferable, and also a few words on other points in connection with operations.

The composition of the calculi in the majority of cases is uric acid in some form, but as regards the debated point as to the comparative hardness of Indian and English stones I must say that there seems to be no difference between the two, judging from the appearance only. Some surgeons have grown so heated on this subject that they may be said metaphorically to have thrown stones at one another, but unless the operator has had experience of both, it must be a difficult point to determine, and my practice is entirely Indian. I have frequently found calculi so hard as to require the use of kid gloves to protect the hands, and a few taps with a mallet on the

handle of the lithotrite also necessary to assist its action, and I have once or twice met with stones which defied all my exertions and those of my colleagues. I have also found that it is much better to use the larger rather than the smallest lithotrite, which will take the stone, if this be done, there is less difficulty in crushing should the stone be harder than usual. Some surgeons, I think, try to crush with the smallest possible lithotrite and thus meet with difficulty.

It is not my intention in this short paper to enter into the causation of stone, all that I need say is that the free action of the skin in a climate such as Bombay and the scanty secretion of urine, might lead one to suppose that the concentration of the urine would assist in the formation of stone, but being a moist climate the perspiration is much more perceptible, the skin is more flabby and the surface damp, so that one seems to perspire more than in a dry climate. As to diet, the chief food is vegetable, but being near the sea and there being large creeks inland, a considerable quantity of fish is eaten by Mahomedans, Hindoos, and particularly by the descendants of the Portuguese, many of whom are fishermen, and I have had several hard uric acid stones from the villages in which the latter reside. Europeans in India are not especially liable to stone. I have had only two cases during a residence of nearly 25 years and seen a few more in children, neither of the adults resided in Bombay. I cannot, therefore, throw any light on causation, which has been fully discussed by others without much result unfortunately, and I can only agree with the generally received view that it seems to depend on irregularities and disorder of digestion. Notwithstanding all that has been written of late on the treatment of vesical calculus, there still remains a good deal of difference of opinion on this subject. I propose to shortly state the views I have formed as the result of my experience in Bombay. These do not, it is true, differ much, if at all, from those of other Indian surgeons, but on one or two points there is certainly room for discussion.

First as regards *lateral lithotomy*, it seems to me, that there are very few occasions in which this operation is called for, it is true that it can be fairly easily performed, and in children at all events, with a small rate of mortality. The chief objection which I have against it is the possibility of incontinence of urine occurring subsequently, this is a very serious sequela indeed to a child, who for the rest of his life is to be the victim of this disagreeable condition, one which in England at all events will prevent him from mixing with his fellows, to whom he will be a source of disgust and remark. If we ask how this condition arises, I suppose we must answer, as the result of too free division of the neck of the bladder. We should then be careful to avoid such division.

is the conclusion we arrive at, unfortunately, however, it is difficult to measure the length of our deep incisions as they are not visible, and the size of the stone may require an incision larger than we should consider safe, but yet we cannot avoid making it. I have seen patients suffering from this sequela who had been operated upon by most careful and skilful operators, and I have no doubt that had I been able to follow up my own cases, I should have met with a certain number in a similar state. No writer has, as far as I know, ever given the percentage of these cases, and in Indian practice it would be impossible to find out, for patients disappear to their own houses and are never heard of again, and I am inclined to think that they would be more likely to consult another surgeon rather than the one to whom the occurrence could be attributed. Then, again, except in very slight cases, no treatment that I am acquainted with has the smallest effect on the bladder, and the patient is doomed for the rest of his life to be incapacitated from mixing with others, to a certain extent is debarred from work, especially in a civilized society, and is most probably unable to marry. In the case of Indian children it is of course likely that the child is already married, and then if his state becomes known, a quarrel or troublesome lawsuit is entailed, owing to the natural objection raised by the relations of the unfortunate girl. If we were to suppose that this complication is not more than 1 in 1,000 or even 2,000 cases it would, to my mind, be quite sufficient to make one hesitate before performing this operation. Imagine what our feelings would be were we ourselves or any of our family afflicted in this unfortunate manner. I have, however, known a few instances of slight incontinence in which power had been regained, but not if any period of time had elapsed without improvement.

There is also the possibility of opening the peritoneal cavity, an accident which has not, I think, been sufficiently commented upon, and which would be very likely to end fatally, especially as it may not be noticed unless the opening is large enough to allow of the escape of the intestine. On one occasion only that I am aware of it occurred in my practice, and, I am sorry to say, with a fatal result. In old persons, although the occurrence of the incontinence is not quite such a serious objection bad as it is, yet the fear of hæmorrhage is not to be underrated, and if the patient is aged and feeble, this hæmorrhage may be quite sufficient to turn the scale against him.

Now, as regards litholapaxy, in adults we have in ordinary uncomplicated cases an almost ideal operation, the only objection to it being that it requires a certain amount of practice. Without going so far as to say that we must, like the skilled ophthalmic surgeon who has to first destroy a hateful of eyes, destroy the first

patients on whom we operate by crushing, yet there is no doubt that our first few cases should be carefully selected, and that we should be assisted and advised by a skilled professional brother, hence it is difficult for any one who has not these advantages in a hospital to extend his surgery in this direction. For, he may have no choice of patients and no advice close at hand, his first patient on whom he proposes to operate may have cystitis and may be old and feeble, hence it seems to me difficult for men to get sufficient practice in this country where stone is not very frequent. The rate of mortality, as proved by Keegan, Freyer, Milton, Smith and others, is so much smaller than that of lateral lithotomy that at the present day in adults, at all events, most of us, I think, are agreed that this is the operation for choice. Although it is the operation I have myself most frequently performed, yet all the details are so fully discussed in the admirable practical book by Freyer that I have nothing to add which has not been fully described.

Most stones can be crushed per urethram or perineum, encysted calculi and perhaps some very hard calculi are the only ones that cannot be treated by this method. I need only say that as regards encysted stones their number will be found to decrease with the increasing practice of the surgeon, this observation has been made before, and personally I have only met with one case in which the stone was really encysted in such a way as to be unreachably by the lithotrite. I had crushed one stone and withdrawn the fragments when the sound was felt to impinge on a stone of apparently small dimensions, and which could not be grasped by the lithotrite, having opened the urethra in the perineum and introduced the forefinger, I found that the top of a calculus could be felt lying in a pouch, no efforts of mine in the bladder or by rectum could dislodge it, I therefore decided to operate again later as the patient was not fit for further procedures. After the lapse of a few days, I opened the bladder above the pubes and felt the top of the stone with my finger, as the aperture of the pouch was small, it was necessary to gradually dilate it before an instrument could be introduced, the stone then twisted round in its abode on attempt at seizure, so that I had to get my assistant to grasp it with two fingers per rectum, after which it was easily removed, it was round, hard and weighed two and a half diachms, the patient made a rapid recovery.

If, when the operator is unskilled, litholapaxy be attended with difficulty and with risk to the patient when an adult, how much more is this the case when we come to children in whom the tissues are easily torn and the passages small and difficult. In the hands of Keegan and others the operation has proved a most successful one, but it requires the greatest care in its perform-

ance In the first place, although the passage of the sound may be perfectly easy, the surgeon may find to his disgust that, owing to the doubling up of the small penis, of which he can get little hold, a small lithotrite will absolutely refuse to pass beyond the base, this point being often constricted. Even should he succeed in so doing, his difficulties are by no means over, he will find the lithotrite held and its movement restricted by the narrow passages, and he will have to pass it more than once each time with difficulty, and also introduce the evacuating canula. Moreover there is from some stones an amount of fine dust which becomes collected near the neck of the bladder, is ground into the mucous membrane, and every withdrawal or introduction of an instrument is attended with much difficulty, and, I feel sure, by laceration of the delicate membrane. The advantages of a perineal opening, as advocated by Keith of the Indian Medical Service, are not, I think, sufficiently known in England, if they were, they would be much more appreciated. The urethra is opened in the perineum on a staff, and the lithotrite is passed through this into the bladder, the operation becomes like that in the female, the ease with which the lithotrite can be manipulated is much increased both at its introduction, during crushing and on its removal, so that if debris be collected at the neck it is no longer forced into the tissues. I do not hesitate to say that the operation is facilitated by 50 per cent, if there be cystitis or much powdering of the stone, I find it is a good plan to pass a silver tube through the opening into the bladder, it allows escape of dust and through it the bladder may be syringed, if necessary, this plan is specially useful in old people with cystitis. The tube may be kept in for a few days or ten days, and I have never found any difficulty arise from delayed closure, in the course of a short time it is completely sound. The administration of chloroform during the operation is a very important factor in its success. A timid anaesthetist may, by never getting the patient well under, very much increase the difficulties of the surgeon, and even give rise to a good deal of danger to the life of the patient. For it is quite impossible to seize and crush the fragments with ease, unless the bladder walls are passive, some bladder are certainly more sensitive than others, and in such cases the movements of the lithotrite at once set up contractions which very much hamper if they do not altogether put a stop to further progress. And I have found it on many occasions absolutely impossible to even turn the instrument until more chloroform had been given. Then later when the surgeon begins to remove the fragments, he may find the bladder at once resist, and if force be applied there is considerable risk of rupture. The only way is to push the chloroform until all such resistance is removed. With a good chloroformist the opera-

tion is comparatively plain sailing, with a bad one the operation is full of checks and annoyances to the surgeon, and the time required to complete the operation is much protracted. I have had to operate when the patient had not been under from first to last, although altogether a good deal of chloroform had been given owing to the time consumed, and in such cases when all is at last finished, the patient is found to be deeply narcotized just when he should be recovering from the effects. Unless one can be sure of obtaining a skilful anaesthetist, I doubt if it be advisable to operate by crushing, fortunately, however, in England one is generally to be secured readily. This is not always the case in India, and I well remember on one occasion, after waiting for twenty minutes and finding the patient still lively, asking the chloroformist how much he had given. He solemnly replied, "I have already given three minims."

Suprapubic lithotomy, I consider as regards adults, to be undesirable except in the case of very large stones. I have removed one weighing seventeen ounces by this route, it is now in King's College Museum, London, the patient died a fortnight afterwards.

In ordinary cases the operation is much inferior to litholapaxy, and in old patients I find that the wound heals with difficulty or not at all, phosphates accumulate, and the patient dies slowly from exhaustion. If the patient be kept on his face as recommended by a Russian surgeon, he has to undergo a most tedious method of treatment—I might say torture—and if the bladder be sutured, it by no means follows that he is out of the wood although his chances are improved. In either case I find it best to drain through the perineal urethra, it does not increase the risk of the operation, and it only takes a few minutes to put in the tube. But in children I hold that the operation (except for very small stones) is a very good one, and should certainly be considered by an inexperienced operator as preferable to crushing. It seems to me that a good deal of the difference of opinion between Indian and English surgeons as to the advantages of the two operations would be removed, were it admitted that in the case of children the suprapubic is very safe. The bladder is high and easily made by injection to rise well above the pubes, it is therefore readily opened without danger to the peritoneum, its contents can for the same reason be easily removed, and the subsequent suturing carried out with facility. I think the operation has not been quite sufficiently appreciated, because in the case of children lateral lithotomy has been opposed to litholapaxy, and the suprapubic has been considered much more for adults. If lateral lithotomy were put out of the question in the case of children, as I consider it should be, this it would be for us to determine which, under the circumstances, it is best to perform, supra-

pubic or lithotomy in the case of a child. My feeling most certainly is, that for men engaged in general as opposed to hospital practice, the suprapubic is much the safest, in the case of a specialist more could be said on the advantages of lithotomy, but in England, at all events, only a few can become sufficiently practised, and therefore it is unnecessary to say more, seeing that any general surgeon may wish, or have to operate, and may do so safely by the suprapubic operation. We must also take into account the fact that cystitis in children is less common, much more readily subsides, and hence the cutting operation is more cleanly, and the incision more likely to heal satisfactorily than in those cases in adults in whom the suprapubic may have to be performed owing to the size of the stone. I operated for instance during the last ten years on ten children by suprapubic lithotomy without a single death, they were, however, good patients, that is to say, the stones were not of unusual size and might well have been crushed. It was with the intention of testing the operation in such cases as against crushing that I performed it. When the stone is very large and the child feeble, then this operation is not one of choice but of necessity. I do not therefore include such cases when comparing the results of the two operations. I have also removed stones weighing $2\frac{1}{2}$ and 3 ounces from children of 8 and 10 years, when crushing was not advisable, but the results were fatal. The specimens I hand round were taken from young boys, and I may mention the bladder was sutured in some but not in all instances.

By Evacuator—If the stone be small, and the patient have fairly roomy passages, it is often possible to remove the calculus by a good-sized evacuating canula, here are ten calculi which have been removed in this way. It may happen that on attempting to withdraw the canula so great resistance is experienced as to render it impossible to do so except by force, force should not of course be used, as much damage may be done. If the evacuator is forcibly compressed or a stylet passed, the stone can usually be expelled and may afterwards take up a more favourable position in the eye of the instrument. I have several times succeeded in this way in removing a stone which at first appeared impossible.

Perineal Calculi—Here is an interesting example of a stone or rather stones which I removed from a sac in the perineum, situated partly anterior and partly in the scrotum. There was a tumour about the size of a golf ball, which, on manipulation, gave a peculiar sensation, a grating, but not exactly a hard grating feeling due to the movements on each other of the components of the mass. There were a number of calculi, over 200, all beautifully fitted against each other and faceted. I have operated on another similar case, but have not the specimen,

and I assisted Colonel Banks, I.M.S., to remove a still larger one, which case was published in the *Bombay Medical and Physical Society's Journal*.

I have also removed a preputial calculus consisting of nearly 1,000 stones similar to the perineal one, there was a large globe at the end of the penis, nearly as large as a tennis ball, it gave a similar grating sensation on manipulation. If I remember rightly I sent it to the King's College Museum.

Mortality—I have taken the statistics of the Bombay Hospitals from 1891-1900 inclusive omitting one or two years which I could not obtain, owing to the way in which the statistics are prepared, I cannot unfortunately separate those of my own hospital from the others. The mortality all round is certainly high, as I have already stated, patients who have lived long in Bombay are not good subjects for operation, but only a minority of the cases are, however, really residents of the city, circumstances such as intemperance, want and hot climate, the overcrowding and filth of Bombay are all against the patient. A surgeon who had practised up-country as a Civil Surgeon in a dry climate once remarked to me, that he was much surprised at the high mortality of stone in Bombay. He himself had published 100 cases of lateral lithotomy with only two deaths. Yet when he was appointed to the Jamsetjee, I found that his mortality was about the same as that of his predecessors, and as I worked with him, I was able to closely watch his cases. It will be seen that the mortality of the suprapubic operation is 25.7, of perineal lithotomy 16.07, and lithotomy 4.6. I may here state that I have included cases returned as "discharged otherwise" as fatal, because I know from experience that such is pretty sure to be the ending, also returns under the head of lithotomy are included in lithotomy because surgeons did not at first use this term, but stuck to the old one for some time.

Then, again, as regards perineal lithotomy during the last ten years, I have no hesitation in saying that this operation was only performed because, for some reason or other, lithotomy was not possible, and the patients were hardly good ones for any operation whatever, the rule being to crush on every possible occasion.

During the less than ten years there were 31 cases of suprapubic with 8 deaths, 148 of perineal with 22 deaths, and 429 of lithotomy with 20 deaths. Comparing these statistics with those of the whole Bombay Presidency from 1881-1900 inclusive and from 1891-1900, omitting the Bombay City hospitals, we find there were 141 cases of suprapubic with 58 deaths—a mortality of 41.1, eight thousand two hundred and ninety-three of perineal operation with 695 deaths or 8.3 per cent, and five thousand three hundred and eighty-three lithotomies with 214 deaths,

or 4.01 per cent. It is interesting to note the gradual rise of litholapaxy and decline of cutting operations, and this would be still more marked were instruments for crushing supplied more liberally to up-country stations, for native patients are only too glad to escape the knife, but except at big hospitals this is not the case, and consequently patients must be cut.

Taking my own cases of 29 operated on by suprapubic, nine deaths occurred, or 32 per cent., of 119 lithotomies, perineal, 12 died, or 11 per cent., and of 352 litholapaxies 16 died, or a mortality of 4.7.

I may state that my own table does not include a series of 200 cases or more, of which I have not sufficient data to justify my publishing them, they were private cases, and in many I was unable to secure even the stones, as friends like to keep them, but I should say without hesitation that the results were rather more favourable than in hospital practice, as the patients were of a better class altogether and mostly visitors from out-stations whose health had not been deteriorated by even a short residence in Bombay. It is true that as regards adults, I have reserved the suprapubic operations for the worst cases, and were it not for the operation performed on children, the mortality would have been much higher.

I trust that I may have in these remarks said something of interest if little that is new, and that in a part of England, which may I suppose be still considered as the chief stone district, there may be some present who will give us the benefit of their opinion, more especially as regards suprapubic operation in children.

BOMBAY HOSPITALS

	Sup	Pub	D	Perineal	D	Litholapaxy	D
1891	1	0		31	2	35	0
1892	3	2		30	7	44	1
1893	2	0		27	5	35	2
1894	1	1		20	2	43	2
1895	5	1		13	1	41	0
1896	4	1		9	0	37	3
1897	1	1		2	0	21	1
1898	5	0		5	1	41	1
1899	4	0		4	2	66	7
1900	5	2		7	2	66	3
	31	8		148	22	429	20
Mortality	25	7		16.07		4	6

BOMBAY CITY AND PRESIDENCY

With discharged otherwise and relieved

	Sup	Pub	D	Perineal	D	Litholapaxy	D
1881	—	—		484	47	23	2
1883	2	1		512	51	26	4
1884	1	0		524	36	26	2
1886	11	2		577	55	21	2
1887	6	4		604	41	40	4
1888	8	7		627	57	30	3
1889	7	6		647	62	57	5
1890	12	3		672	52	90	11

PRESIDENCY ONLY

	Sup	Pub	D	Perineal	D	Litholapaxy	D
1891	9	3		487	31	314	12
1892	9	1		419	39	453	28
1893	10	4		456	24	703 (?)	5
1894	6	2		391	40	448	14
1895	6	2		393	31	547	14
1896	3	1		372	49	563	12
1897	1	1		224	23	380	21
1898	18	11		309	15	545	17
1899	16	8		324	24	478	29
1900	16	2		271	16	612	29
	141	58		8,293	695	5,386	214
Mortality	41	1		8	3	4	01
				Omitting 1893		4	5

AUTHOR

	Sup.	Pub	D	Perineal	D	Litholapaxy	D.
	29	9		119	12	352	16
Mortality	32			11		4	7

SOME SEPTIC INFECTIONS AND NERVOUS LESIONS FOLLOWING CHANCROIDS

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A—Arthritis following Chancroids

IN civil hospital practice in India, and in military practice, we frequently meet with a well defined chronic disease involving the joints, almost always affecting several articulations, permanent in its effects, crippling in its results, and extremely resistant to treatment, and the history generally given is that this type of arthritis has followed the appearance of a chancroid. It is the rule to learn that this chancroid appeared within three months before the disease in the joints, also that the sore appeared definitely two or three days after exposure to infection, had a typical appearance and course, and was not followed by any manifestation of syphilis at all. These conditions of chancroid and crippling joint disease are evidently in the relation of cause and effect. I desire in the present paper to call attention to this and some other remarkable lesions which follow rapidly on venereal sores, as I think they have not received the attention they merit, and in my experience are a very frequent source of invaliding in the native army.

The term "chancroid" is applied to what is usually spoken of as the "soft" or "non-infecting" sore. Its typical characters are well known, namely, that it appears after a very short incubation period, two or three days after exposure to a specific virus. This virus is of low malignancy or vitality, therefore the ulcer is found entirely on the genitals at the part where the virus was locally applied, seldom or never on the fingers, lips, or eyelids. These sores are frequently multiple, and form ulcers with shelving or punched out margins, leading down to

a sloughy base, which freely secretes pus, this pus contains the specific virus. The edges of the ulcer do not indurate, and it is not followed by the appearance of systemic infection. The glands that receive the lymphatics of the part are peculiarly liable to inflame. The inflamed glands become enlarged and tender, fuse together, and suppurate. The chancroid heals rapidly under local antiseptic applications.

In a small percentage of cases in England, but in a much larger percentage of cases in India, the true virus of syphilis is inoculated at the same place and time. In such cases, as a rule, the chancroid does not heal with readiness under the antiseptic dressings; it becomes a callous shallow sore, secreting a thin sanious fluid. In about four weeks after its appearance the edges and base begin to indurate, and finally present appearances which clearly indicate the nature of the case, and call for mercurial treatment. Secondaries are not long in developing, and the case runs the usual course of syphilitic disease.

In a second group of cases, we find that the patient has been exposed to a double infection of another kind; first, the chancroids appear, then evidences of a specific urethritis.

Thirdly, there is another group in which the patients come with ordinary typical chancroids, then appears a gonorrhoeal discharge from the meatus, and finally the chancroid indurates, and this is followed by the usual manifestations of syphilis.

The cases, therefore, with which we have to deal, of chronic joint disease, septic infections, and nervous lesions, coming on after such an evidence of triple infection, become extremely complicated in their pathology and etiology, and we have to distinguish in our treatment how far this condition is a manifestation of septic infection or of syphilis, or how far the syphilitic condition is modified by the septic infection and *vice versa*.

These cases of crippling joint disease when met with in military hospitals are generally classed as syphilitic rheumatism. In the great majority of cases, however, there has been no manifestation of syphilis at all. Nor do they show the characters of a gonorrhoeal rheumatism even in those cases where we have to go by the history (so often unreliable in native patients) which the man gives us, and in those instances where we can follow the case from first to last, that is, from the primary infection to the onset of the rheumatoid condition, we can observe the joint disease following a chancroid which we know was never complicated with a urethritis. I have seen and treated many of these cases when in medical charge of native regiments, and have been struck with their frequency and the general likeness one to another which they show, and conclude that they result from the absorption of micro-organisms (not the gonococ-

cus) or their toxins, from the ulcerating surface, which micro-organisms or their toxins exert a specific effect on endothelial surfaces analogous to that of the diplococci or micrococci of ordinary rheumatism. For a good résumé of the work which has been done on the micro-organisms of rheumatism, see a paper on "The Micrococcus of Acute Rheumatism" by Dr. Walker in the *Practitioner* for February 1903.

The general history of such cases is as follows. Three weeks to three months after the appearance of a chancroid the patient is attacked with rheumatic pains about the joints, generally the knees, but sometimes the shoulder, elbow or ankle-joints. The pain is extreme. On examination, it is found that the ends of the bones forming the articulation are extremely tender on pressure, there is no appreciable effusion into the joints and no increased heat in the part. There is never any evidence of a peri-articular inflammation. The patient prefers to keep his knees in a position of slight flexion, although there is no synovial effusion. After some two weeks of such symptoms, it is found that there is still slight tenderness in the joint, but the most noticeable feature is the extreme atrophy of all the muscles immediately above and below it. Further, the limb is fixed in the position which the patient has assumed during the painful stage, and this position, in the case of the knee, is well illustrated in the following photograph. In such cases the hamstring muscles appear to undergo adaptive shortening very early.

It will be observed that such cases resemble very closely the "osteocopic" pains of secondary syphilis, with this difference, however, that there are no signs of secondary syphilis whatever apart from the joint disease. Further, the effects of the disease are permanent and marked, unlike the ordinary bone pains of secondary syphilis, which are slight in degree and transient, and often clear up without specific treatment. Also during the secondary stage rheumatoid pains are common, and in some cases very severe. Hutchinson says that when rheumatism is severe in the secondary stage of syphilis it occurs probably in those in whom there is an inherited tendency to arthritic diseases.*

Such cases are distinct also from the ordinary gonorrhoeal rheumatism, in which, as a rule one joint only, and that a large one, is affected, and the condition is marked by an evident acute effusion into the synovial cavity, and also much peri-articular inflammation. The skin over the joint is red, and often cedematous. The tendon sheaths around the joint inflame and tend to become matted together. Subsequently the muscles around the articulation atrophy, and the combined matting of tendons, and organisation of inflammatory products, with the muscular atrophy, give to the limb that

* Hutchinson on Syphilis, 1893, p. 31

curious "woodeny" appearance which is characteristic. Lastly, as I have before pointed out, such cases of arthritis following chancroids show no metritis throughout.

The following is a typical case of arthritis following chancroid —

CASE I—*Chronic Arthritis following Chancroid*

M S aged 32, was admitted into my wards in a crippled condition due to old standing disease in both the knee joints. He was attacked three months ago with pain and some swelling of both the knees. The pain was worse at night. The swelling subsided under local applications and enforced rest, but left the knees in their present condition. Both legs are kept flexed at a little more than a right angle. Movement during still greater flexion is easy and painless, but extension on passive movement is impossible owing to the adaptive shortening of the hamstring muscles. There is no

chancroidal pus, which I have occasionally been able to examine, has shown cocci for the most part, also streptococci, staphylococci, or diplococci, separate or together. Pus from buboes has shown diplococci. De Luca considers that in chancroids there is a specific coccus, which is found in association with the staphylococcus pyogenes aureus and streptococcus pyogenes, and that the virulence of the specific coccus is heightened by the presence of the two pyogenic cocci. Bacilli have also been described by Ducroy as present in chancroidal pus, but attempts at cultivation have failed. There can be no doubt that infection from such sores must practically always be a mixed infection. We know that the lymphatic absorption from such ulcers, even when of minute surface area, can be very intense, in fact, it frequently happens

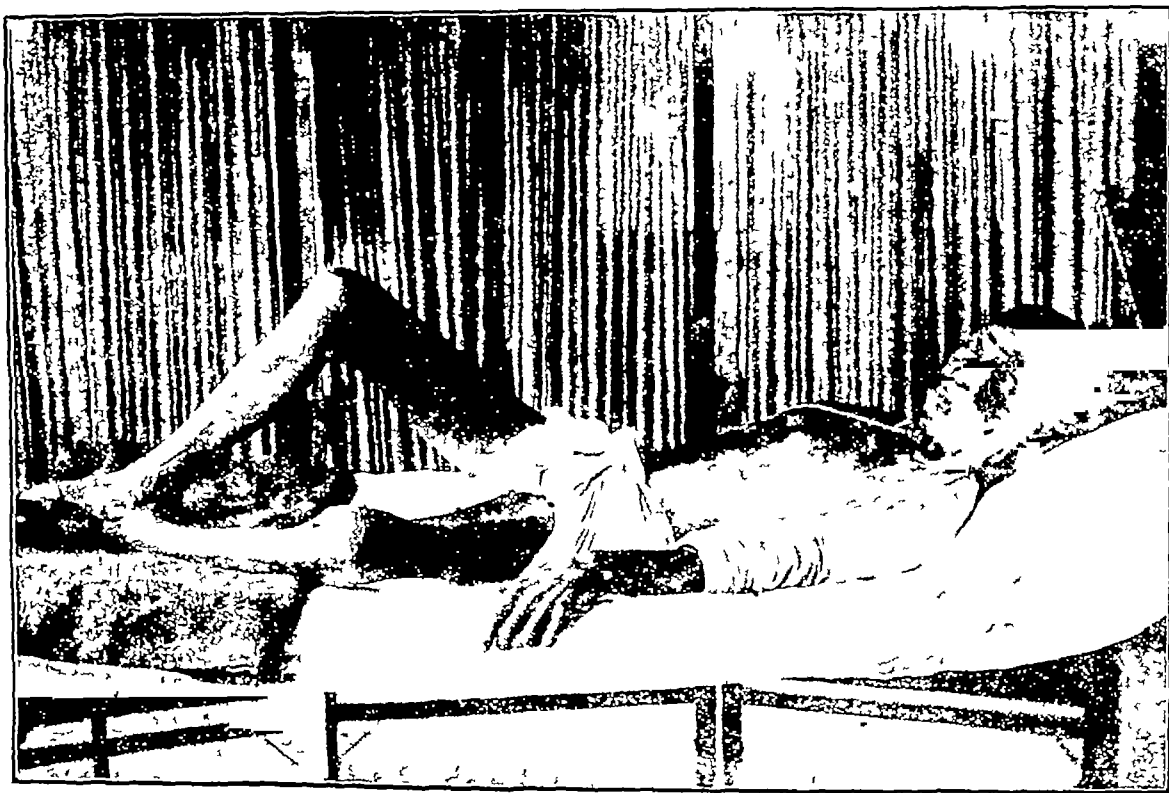


FIG. I

fluid in the joints, but slight thickening of the synovial membrane. The joints appear large on account of the great wasting of the muscles around them. There is a sensation of fine grating in the synovial membrane on passive movement. He states that ten years ago he had gonorrhœa, which was evidently complicated with chancroids, as he states that the prepuce was lost by ulceration. On the under surface of the penis, where the frenum would have been, is a large white scar of a fairly recent chancroid. There is nothing in the history or in the patient's appearance to suggest syphilitic infection. The present condition of the knee joints is shown in the following illustration. He refused tenotomy or other operative interference. The position of the right knee, shown in the figure, represents the amount of extension of the leg possible. The atrophy of muscles is well seen in the left leg.

Pathology—The micro-organisms, which can be found in chancroids are of many kinds

that a patient comes with an angry, rapidly suppurating bubo, and that one can demonstrate to him as the source of the trouble—a minute sore, the size of a large pin's head, beneath the prepuce, of the existence of which he was previously ignorant. In fact, the law that "the smaller the chancroid, the worse the bubo" has often been emphasised.

Further, we know that in tropical climates buboes arise in the axillæ or groins where no cutaneous lesion can be found. These "climatic buboes" are often a source of trouble in diagnosis, especially when occurring in Europeans and in the presence of a plague epidemic. The micro-organisms of the skin are probably many, and of various kinds, and it is reasonable to believe

that then virulence becomes exalted in the heat of a tropical climate, and in association with an unusual amount of exudation from the cutaneous glands. The staphylococcus epidermidis albus of Welch is the most common micro-organism of the skin, obtained from cultures it is only slightly pyogenic. It is supposed to be a cause of stich abscesses. It seems to me that the absorption of these cocci from the skin, when then virulence has been exalted by heat and moisture, explains the "climatic buboes" so often met with in Europeans in India, and not by any means always among the anæmic or debilitated. Mr Arnold Caddy* sums up an extremely valuable paper on climatic buboes thus—"I think we have in climatic buboes an adenitis occurring in persons debilitated by tropical influences, and so far only the term climatic, as indicating the predisposing cause, is appropriate. But there is no doubt in my mind that the exciting cause is the entrance of the ordinary microbes of suppuration into the lymphatic system, more often through trifling lesions of the skin." In many of these cases, however, which I have seen in European soldiers I have not found any evidence of debilitation, and consider the condition is best explained by an exaltation of the virulence of the micro-organisms of the skin, due to the assistance in growth from heat and moisture which these cocci receive on the surface of the body in tropical climates.

Following out this idea, I think it is reasonable to hold that the severity of the chancroids which one sees in India, and the marked lesions which the absorption of the poisons from them produces, are to be explained by the exaltation of the poison under the influence of climatic conditions.

The following case shows well the influence of a mixed infection, in producing a septic infection of endothelial surfaces in a syphilitic subject.

CASE II—*A case of infective soft chancre associated with inflammatory polyarthritis*—R. H., male, aged 26, was admitted into my wards, suffering from swelling of both knee joints, and pain and swelling in the left shoulder. On the penis around the frænum was a large chancreoid, discharging a sero-purulent fluid freely, without any induration of the spreading edge of the ulcer. He stated that he had had the sore for fifteen days. The joints had become affected a few days previously. There was a marked papular eruption of secondary syphilis on the chest and flexor aspects of the limbs.

Both knee-joints were distended with fluid, the skin over them red and puffy, and the joint ends of the bones were extremely tender. A similar condition obtained in the left shoulder. The patient looked very ill on admission, with fever, rapid pulse, dry brown tongue, and the local signs suggested that the synovial effusion was becoming purulent. There were no signs of any endocarditis, and the lungs were clear. The urine showed nothing abnormal.

Both knee joints were placed on well padded back splints, and frequent fomentations applied. Hutchin-

son's pills were given, and the mercury pushed, quinine was also given. The chancre rapidly healed up under antiseptic lotions.

In about ten days the symptoms of acute inflammation of the joints subsided, and there was left merely a bilateral passive effusion in the knee joints which by the eighteenth day of treatment had become almost absorbed. The temperature rose at night to 101–102°, falling to 99–100° in the morning. It was not the rise of temperature which is frequently met with in secondary syphilis (one in every three cases—Fournier) it suggested a slight septic intoxication. Here then, in addition to the ordinary bilateral passive effusion into the joints characteristic of secondary syphilis, we had evidence of the effects of the absorption of septic micro-organisms. Had not the inflammatory symptoms in the joints so rapidly subsided under local treatment, and on the removal of the seat of septic absorption, I should have asked a surgeon to see the case with a view to draining the joint*.

B—Peripheral neuritis following chancroids

The next important lesion we find following chancroids is a very serious form of polyneuritis. Some years ago Lieutenant-Colonel Maitland, I.M.S., called attention to these cases, and published accounts of a group of them which occurred in the 1st Bombay Lancers.

The peripheral neuritis appears very shortly after the healing of the chancreoid, and often a slowly healing ulcer on the penis may be found in association with the paralysis. The onset is sudden, but the paralysis affects one muscle after another, and then reaches a point at which it stops. The lower limbs are most often affected, but generally there is some paresis of the upper extremities. Some modification of sensation in the paralysed limbs is always present, but this anæsthesia is transient, and may have completely disappeared when the patient comes for treatment. Evidence of true syphilitic infection may or may not be found. I believe that the nerve condition has no connection with syphilis at all.

Some of the muscles affected ultimately regain their power, very like cases of acute anterior polio-myelitis, but some are always left functionless, and this condition is incurable. Many of the patients become hopeless cripples with flail-like drumstick legs, a few emaciate and die. The paralysis generally concerns the limbs, but sometimes one side of the face becomes paralysed, and rarely, and that only in very bad cases, the diaphragm fails, and breathing becomes purely costal.

The following are illustrative cases—

CASE III—*Peripheral neuritis following chancreoid*—P. T., aged about 30. Hindoo, was admitted into hospital, September 22nd, 1902, for loss of power and sensation in the upper and lower extremities. He sometimes did the work of a cooly, and had to lift heavy bags at other times did the work of a cart driver. He occasionally took a moderate quantity of alcoholic drink, but never in excess. He was rather poorly developed.

* For a recent paper on the advantage of early surgical interference in these cases of septic synovitis, see a paper by Mr Wallis in the *B. M. J.* of January 3rd, 1903, p. 9.

History—Four months ago he had a sore on the penis, which has left a scar, but was not followed by secondary symptoms. One month after this he had an attack of fever. Shortly after this he suffered from rheumatoid pains in the limbs. Four days after this rheumatic attack began he noticed coldness and numbness in the lower limbs for which he sought treatment. This feeling of numbness was preceded by formication in the upper limbs. Almost immediately afterwards a similar sensation appeared in the lower limbs. Then there rapidly appeared loss of power in the muscles of all the extremities.

On admission there was loss of muscular coordination in the lower limbs, and the patient was unable to stand or walk. Power of movement of the feet and toes was present, but all movements were feeble.

When lying at rest there was marked foot-drop. There was wasting of the anterior and posterior muscles of the leg, especially the former. The calf muscles were

The following case shows the more severe type of this complaint. Some of these cases end in death. Two such cases, who became miserable wrecks, were sent on sick furlough, and died in their homes.

CASE IV—*Severe multiple peripheral neuritis, following repeated chancroids, and associated with the presence of a Hunterian chancre*

Private K. K., 16th Bombay Infantry, aged about twenty seven, was admitted August 12th, 1902, for a Hunterian chancre, and was placed at once on Hutchinson's pills, which were pushed as rapidly as possible. No symptoms of secondary syphilis developed. On September 4th, it was noticed that the right side of the face was paralysed, he could shut the right eye, but there was marked weakness of the orbicularis palpebrarum as compared with the left side. About the



FIG. II.

somewhat tender. The extensor brevis digitorum pedis was also wasted. The hand was kept flexed owing to weakness of the wrist extensors. There was marked wasting of the interossei of the hand and also of the muscles of the thenar and hypothenar eminences. Sensation was lost in the palm of the hand and fingers, and in the feet and legs half way up to the knee. The pupils reacted to light and accommodation. The patellar and triceps jerks could not be elicited. Nothing abnormal could be detected in the thoracic and abdominal organs.

Three months and a half after admission he was practically in the same state. There was less pain in the muscles. There was considerable power in the right wrist extensors, and slight power in the left. The fingers remained flexed when the extensors were not put into action. The first phalanx was extended and the second and third flexed. There was marked wasting of the interosseal muscles. Fig. II shows his condition at this time.

Treatment with potassium iodide and mercury, later with strychnine and iron, appeared to have absolutely no effect.

6th of September he became very emotional, weeping when anyone approached him, and screaming when he was moved or examined. He declared that he was losing power in his limbs, and that he had pains all over him. He could, however, walk with assistance. There was no anaesthesia, but he volunteered the statement that he had a feeling in the limbs as if ants were crawling over him. Two days after this there was complete paralysis of both legs. There was only slight tenderness of the calf muscles. There was no paralysis of the arms at any time, but both upper limbs were extremely weak, especially the right. Knee jerks lost ankle clonus not obtained. The diaphragm moved slightly during respiration, but breathing was almost entirely costal. Respirations from 24 to 30 per minute. The muscles of the neck acted naturally. The pulse was small, easily compressible, and varied from 108 to 120. There were occasional attacks of collapse. The temperature rose at night to a little above 99°, in the mornings it was subnormal, about 97°.

There was great mental depression and power of attention was almost nil. No incontinence of urine

or fæces. The treatment adopted was a hypodermic injection of liquor strychnine (m v, subsequently m iii) once a day, the mercury was continued, and in addition a mixture containing iodide of potassium and nuxvomica. From the time of the exhibition of strychnine he began to improve. On September 23rd, the temperature ran up to 100.2, and he had a typical attack of quotidian fever, extending over the four following days, the temperature reaching 103.4°. Examination of a blood film for plasmodia was negative, and this, coupled with a rapid emaciation, suggested disseminated tuberculosis but careful auscultation revealed nothing abnormal in the lungs. Quinine was exhibited, and the temperature fell to normal. It was therefore a malarial infection, probably contracted from other cases in the same ward, *via* an anopheles.

With this interruption recovery was progressive, but not rapid. On October 6th, he could use all the muscles of the lower limbs, weakness was most marked in the quadriceps extensor cruris there was no perceptible difference on the two sides. Power in the upper limbs was almost entirely regained, and the diaphragm acted normally in respiration. There was no loss of sensation anywhere, or of ability to localize a pin prick with the eyes shut. He was still in a very emotional state, and was very emaciated. The eyes reacted naturally to light and accommodation. After the termination of the malarial attack the pulse and respiration rate fell to normal. The chancre had completely healed. On his discharge from the service shortly after he was able to get about with the aid of two sticks.

These nervous symptoms coming on twenty-one days after the appearance of a Hunterian chancre, one would naturally infer to be syphilitic, but a reference to the man's medical history sheet gave the clue to the case. From this record it appeared that he had been regular and temperate in his habits down to the early part of 1901. In January 1901, he contracted a soft chancre which required local treatment only, and he left hospital after thirty-nine days' detention. In May 1901, he was again in hospital with a chancre, and left hospital after eighteen days. At the beginning of April 1902 he was again in hospital with a chancre, which required twenty-eight days' treatment. On 12th August, he was readmitted for an infecting chancre.

Pathology—There can be no doubt that the majority of these cases of peripheral neuritis are typical enough. We know from experience of diphtheria that a superficial ulceration may be followed by paralytic conditions of a very marked kind. Some of these cases, however, in their sudden onset, absence of anæsthesia, or merely a slight and transient sensation of tingling, but especially the manner in which muscles or groups of muscles are picked out, show a very close resemblance to the acute anterior polio-myelitis of children.

I have had at present no opportunity of making a *post-mortem* examination on any such case, and therefore at present must leave it open, but it is interesting in this connection to note the effects which have been produced in animals by the injection of pus-producing organisms.

"It has been found by independent observers that in cases where rabbits recover after intravenous injection of bacillus coli communis, a certain proportion suffer from paralysis and sometimes from atrophy of muscles, especially of the posterior limbs, these symptoms being due to lesions of the cells of the anterior cornua of the spinal cord. Somewhat similar results

have been obtained by others after inoculations with staphylococci and streptococci, a certain proportion only of the animals showing paralytic symptoms and corresponding changes in the spinal cord. The lesions are believed to be due chiefly to the actions of the products of the micro-organisms on the highly organised nervous elements. Much further research requires to be done before the importance of these results can be properly appreciated, but it is not improbable that it will throw light on the causation of nervous lesions which occur in the human subject, and the etiology of which at present is quite obscure."*

The authors then instance those curious cases of paralysis associated with cystitis, of which I have seen one example.

Treatment—If we admit the occurrence of these serious lesions following chancroids, our treatment of the ulcers ought to be more radical than it generally is. We should aim at the prevention of the occurrence of these sequelæ. It is hardly realised what a large amount of time patients pass in hospital when suffering from chancroids and their effects. From eighty to a hundred and twenty days is no uncommon time for these patients to pass in hospital. Several years ago I learnt from Mr Jonathan Hutchinson, junior, a method of treating them which I have found invaluable in India in military practice, and I see that it is described in his article on gonorrhœa in Treves' System of Surgery. The ulcer should be well exposed and laved with boracic acid solution, a 5 per cent solution of cocaine should then be dropped on the surface, and then with a fine camel's hair brush liquefied carbolic acid should be painted over the whole surface of the sore. The acid must, of course, be carefully applied so as to prevent it running over on to healthy parts, but this can be prevented with ordinary care as the acid immediately coagulates the albuminous material with which it comes in contact, and stains it a milky white. The application of cocaine, however, is not necessary, as the pain, if there is any, hardly lasts ten seconds, the foul ulcerating surface is immediately transformed into an aseptic healing sore. By this method, a patient hardly ever remains in hospital longer than a week, and if the cases are obtained early, buboes become extremely rare.

The treatment of buboes ought also to be more radical than it usually is. The lymphatic gland is the first line of defence against micro-organisms. These irritating particles are caught in the meshes of the gland, and excite an adenitis, the object of which no doubt is to produce a phagocytosis. Nevertheless, as long as the microbes remain in the gland producing foci of suppuration, so long must their toxins continue to be manufactured in abundance, and

* Muir and Ritchie, Bacteriology, 1897, p. 157.

as Leaf has shown that the gland is directly connected with a vein, we can understand that, if the gland be allowed to go on suppurating for a long while, as sometimes happens, a large amount of toxic material is being absorbed over a long period of time. And furthermore, it is passing direct into the venous circulation. A suppurating gland in venereal cases does not break down by one centie, but from several. If a section be made of such a gland several foci of different ages and sizes will be found throughout its substance, and so long as one centie of supuration remains, even if this centie be on the deep aspect of the gland, the wound in the groin will never heal. It is, therefore, quite useless making incisions through the skin over the gland. Suppuration will go on until the whole gland has necrosed. It is, therefore, better to anticipate matters by removing the gland at once.

The skin around the wound should be carefully asepticised, and when the patient is under the anæsthetic, the parts should be well scrubbed with a nail brush, the cedematous skin around the wound cut away with scissors, and the necrosing gland dissected away, if possible, or if not, scraped away with a Volkmann's spoon. The cavity should then be swabbed out with some 1 in 40 carbolic. Having in this way converted a foul area into a clean cavity, silk-worm gut sutures should be inserted, a small drainage tube put in at one end to facilitate the removal of serum, dressings and bandages firmly applied, and the thigh put up in slight flexion. If the skin is very cedematous, the stitches will probably come away, and the wound will have to heal up aseptically from the bottom. As a general rule, however, the wound heals by first intention, and the stitches can be removed on the tenth day.

As regards the treatment of the joint condition the affected joint should be placed on a splint to prevent flexion and subsequent contractions. Mercury and iodide of potassium seem to relieve the pains.

The nervous lesions above described appear to be incurable, hypodermic injections of strychnine seem to be of the most real use.

NOTE ON THE CLIMATE OF ERYTHREA.

By G. M. GILES,

LIEUT.-COL., I.M.S. (Retired)

THE courtesy of the Italian Government in giving to our expedition against the mad Mullah a free passage across the part of the Somali Peninsula, formed by their colony, has invested this little known corner of the globe with an unexpected interest for English men, and in especial for the Anglo-Indian community, many members of which are actually employed in the present service. It has, therefore, occurred

to me that a note on the Italian official statistics on the subject might be of interest to the readers of the *Gazette*, and through the kindness of Professor Palazzo, the Director of the Italian Meteorological Office, I have been kindly furnished with a couple of pamphlets which practically contain all that has yet been printed on the subject. A very complete set of observatories has been lately established, but as yet the statistics lie in manuscript and are necessarily as yet far too short a period to be of any great value.

One of these pamphlets contains a very able account of the climate of the Littoral zone as exemplified by the port of Massina and Assab, and is from the hand of Dr. Giovanni Petella, one of our *confidés* in the Italian Naval Service. The other on the elevated inland post of Addi Ugri is from the pen of Captain A. M. Tancredi, a military officer, both brochures showing to the full the ability and care which characterizes the Italian man of science.

Most of us know something of the amenities of the climate of the southern end of the Red Sea, and though Dr. Petella has a word or two to say in its favour, and has evidently experienced something of the queer attraction, which all climates including the worst seem to exercise on those who have endured them for some time, yet it must be confessed that a perusal of the statistics he affords leaves one more than ever impressed with the undesirability of Somaliland as a place of residence.

In this part of the Red Sea coast, we find an uniform high temperature, 68°F being about as low a temperature as is experienced in the coldest month. A high relative humidity, and for any cooling effect it can have a practical absence of rain. The very depths of the sea, as far as the word has any application to so shallow a basin, are hot, the temperature of the sea at the surface being as high as 96° in September and about 92° at five fathoms depth, and even in the coldest months, the surface water seldom falls below 80°.

Geologically speaking, the formation of the land, putting aside of course comparatively modern coralline formations on the plains close to the coast, belongs entirely to the primitive rocks, gneiss, mica-chists, and ferruginous crystalline formations predominating. "A landscape cast in virgin copper with here and there in the mountain background, a few clumps of palms, scraggy thorn bushes, and tamarisks, and tiny points of *Salvadora Persica* to accentuate rather than modify the warmth of colouring, is all that meets the eye. A sky steel grey in its shimmering heat at noon, and furnace-like in its fierce colouring at sun down, vaults over a foreground of thirty-inch dust." Why on earth the Italian and the Briton, inheritors of the two best climates of the world, should elect to push their flags to such a land concerns not Major Smith or Hon. Captain Fabio, but the

queer anti-scientific folks they call statesmen, who send the two gallant officers there to make their choice between heat-stroke and the broad spears of the man to the country born. Ten years hence, I suppose the meteorological offices of London and Rome will possess much more exact data, the taste of the local spear-man in printed piece-goods will be utterly debased, and Major Smith and Hon'y Captain Fabro will be commemorated only by appropriate tablets in a couple of old-world churches of the Castelli Romani and the far away lands in the North.

To the other climatic amenities of Massana may be added the additional discomfort, that, at low tide, extensive flats of coral reefs are laid bare, which under the fierce sun, exhale an ancient and fish-like smell which is likened by Di Petella to that of an ill cared for fish market.

During the summer, the wind is usually from the north, and is apt to fall dead calm in the mornings and evenings—a condition of things which, combined with a high relative humidity, causes great suffering.

The worst periods are, however, those when the Khamsin blows. A strong N-N-W wind, intensely hot and dry, so called from an Arabic word meaning fifty, because it is supposed to predominate for about 25 days before and after the summer solstice. Fortunately it usually lasts for a much shorter period at Massana, and its effects are generally modified by sea breeze in the afternoon, but while it lasts, after a brief sensation of coolness, on account of the sudden fall in the relative humidity of the air, and consequent rapid evaporation from the body surface, the effect is that of being exposed to the blast from a furnace. Coming as it does, direct from the Nubian desert, it is loaded with the finest dust to an extent that makes it difficult to breathe, so that those caught by it in the open are fain to lie prone with their faces wrapped in their garments.

The rains are very scanty and most capricious in their distribution, and about the only definite prediction that can be made is that it will not rain during June.

There is practically speaking no rainy season, the average rainfall amounting only to 7.86 inches falling often in isolated heavy showers, at very uncertain periods, so that a month absolutely rainless in one year may be comparatively wet in the next. In so far as it can be said to possess a rainy season at all that of Massana falls during the winter, from December to March, in sharp contrast to that of the *Hinterland*, within the mountains, where, as elsewhere in these latitudes, it occurs in July and August during the time of the S-W monsoon.

Rain falls on less than 30 days in the year, and in the majority of these, the quantity col-

lected is too small to have any appreciable effect. A climate altogether abominable, as may be judged by the following table of the principal climatic data—

Tabular statement of the principal climatic data of Massana, on Red Sea coast—Lat 15° 36' 41" N, Long 39° 40' E

MONTH	Mean Temperatures		Mean Maximum Temperatures		Mean Minimum Temperatures		Relative Humidity %	Rainfall		Number of rainy days
	Fahr.	Centigr.	Fahr.	Centigr.	Fahr.	Centigr.		Inches	Mm.	
January	78.0	25.6	90.4	32.4	68.0	20.0	75	2.05	52.1	7.2
February	78.9	26.0	92.2	33.4	68.4	20.2	76	0.63	16.2	5.1
March	81.0	27.2	94.8	34.9	70.1	21.2	74	0.68	17.5	3.6
April	84.3	29.0	98.4	36.8	72.8	22.6	69	0.11	2.5	1.2
May	88.5	31.3	101.7	38.7	76.6	24.7	66	0.59	14.1	1.1
June	92.4	33.5	105.9	41.0	80.7	27.0	51			
July	91.3	34.8	108.6	42.5	84.7	29.2	56	0.13	3.3	1.3
August	91.6	34.7	106.7	41.5	83.4	28.5	57	0.26	5.7	1.7
September	92.0	33.3	103.0	39.4	78.4	25.7	60	0.17	4.0	1.0
October	87.4	31.7	98.7	37.0	77.2	25.1	60	0.35	9.0	1.0
November	84.3	29.0	95.2	35.1	75.0	23.8	65	0.78	20.0	2.1
December	80.7	27.0	92.0	33.3	69.6	20.8	70	2.27	57.6	3.7

In the above and following tables the data are furnished both in the English units of the Fahrenheit scale and inch, and in those in use on the continent, viz., of the Centigrade thermometer and metre, the latter representing, of course, the original data, while the former are merely approximate transmutations made by means of a scale.

Fortunately, as we leave the Red Sea behind us, the heavy moisture of the atmosphere changes to extreme dryness, and as most of the inland districts are elevated very considerably above the sea level, the temperature never reaches such uncomfortable levels, and the climate of certain favoured regions is exceptionally good, contrasting very favourably with that of our most popular hill stations.

At a very little distance from the Red Sea, in fact, we find a definite rainy season at the normal period of the year—of July, August and September—with a smaller but quite definite *chota bursat* in March, April and May. The hottest time of the year is the spring, at which period of the year the air is intensely dry, the winds being mostly from the N-E, while, however, a settled hill station, with well contrived appliances for the storage of water, may be a most desirable residence, it can easily be understood that, in view of the fact that the country is almost entirely waterless during the dry season, the sufferings of troops on the march, lying as the route necessarily will, for the most part along comparatively low lying valleys, walled in between bare sun-baked hills, can hardly be otherwise than severe. Geologically speaking, the country is a mass of primitive rocks, granite, gneiss and mica-schists predominating, the

surface being broken and the gradients severe, so that even in places where there is a respectable rainfall, none is retained in the soil, so that wells and springs are few and far between, and temperatures that would be tolerable enough with plenty to drink, become absolutely insupportable under the desiccating effects of an atmosphere, almost devoid of watery vapour and loaded with dust

On the whole, however, Dr Petella finds the climate of Massana less unhealthy than might be expected, for, although the moisture-loaded atmosphere produces in almost every one the most aggravated prickly heat, with the usual sequel of boils, malarial fever, typhoid, dysentery and hepatitis are comparatively rare, and he regards most of the so-called cases of climatic fever as being neither of malarial nor of other zymotic origin, but as simply the direct effects of heat, the fatal cases being mostly instances of true heat-stroke, while he finds that the temperature of even healthy adults is uniformly raised a degree or more (centigrade) above the normal during the continuance of the Khamsin

The progressive improvement of the climate of the elevated inland plateaux is well shown in the following table —

Table showing comparative mean monthly temperatures of four stations in Erythrea

MONTH	Massana, 6 m, 18 ft.		Ghinda, 962 m, 3,156 ft.		Cheren, 1,460 m, 4,790 ft		Asmara, 2,327 m, 7,533 ft	
	Fnhit.	Centgd	Fnhit.	Centgd	Fnhit.	Centgd	Fnhit.	Centgd
January	78.1	25.6	65.2	18.4	63.3	17.3	58.8	14.9
February	78.9	26.0	69.4	20.8	67.0	19.4	61.5	16.3
March	79.4	27.2	73.3	22.9	72.0	22.2	61.6	16.4
April	84.3	29.0	78.4	25.8	77.0	24.9	62.8	17.1
May	88.5	31.3	79.6	26.3	75.8	26.3	63.5	17.5
June	92.4	33.5	84.1	28.9	74.8	24.7	63.5	17.5
July	91.7	34.8	87.2	30.7	72.7	22.6	61.6	16.4
August	94.5	34.7	83.4	28.5	68.0	20.0	61.4	16.3
September	92.9	33.8	84.5	29.3	68.4	20.2	62.6	16.9
October	89.2	31.7	76.8	24.9	67.4	19.6	56.6	13.6
November	84.3	29.0	72.3	22.4	65.3	18.4	58.4	14.6
December	80.7	27.0	65.8	18.7	63.3	17.3	58.8	14.9

The above figures have not the same value as those of the preceding table, being taken from those of one year, whereas the others are the averages of several, but serve sufficiently well to illustrate the progressive fall of temperature for each month, as we ascend to higher levels above the sea

Many of these elevated stations possess also quite a respectable rainfall, and must be well suited for adoption as health resorts, as may be judged from the following table of the principal climatic data compiled from the results of five years' observations furnished in Captain Tancred's pamphlet

Climate of Addi-Ugru, Serahr-Erythrea Lat 14° 53' N, Long 38° 48' 40" E Elevation, 6,633 feet = 2,022 metres

Month	Mean temperatures		Mean maximum temperatures		Mean minimum temperatures		Relative Humidity %	Rainfall		Number of rainy days
	Fnhit.	Centgd	Fnhit.	Centgd	Fnhit.	Centgd		Inches	Mm	
January	64.9	18.24	70.0	26.05	51.6	10.87	39.67	0.02	0.35	2.0
February	66.3	19.02	81.4	27.37	51.9	11.02	28.65	0.11	2.76	1.6
March	70.8	21.44	87.0	30.57	55.8	13.12	40.07	0.62	15.36	6.6
April	70.7	21.35	85.5	29.70	56.4	13.62	35.33	0.91	22.77	9.3
May	70.8	21.48	84.5	29.12	53.2	14.57	36.59	1.65	46.18	10.3
June	69.5	20.77	82.3	27.90	60.4	16.74	39.09	2.41	60.59	15.3
July	64.5	17.89	73.9	23.18	54.7	12.53	71.94	5.40	134.87	25.0
August	64.4	17.61	73.4	22.92	54.7	12.56	74.07	7.25	178.13	24.3
September	67.0	19.67	78.8	25.90	56.2	13.34	53.45	1.48	36.85	8.6
October	67.5	19.76	80.3	26.80	54.4	12.40	53.04	0.80	1.02	3.0
November	65.5	18.47	78.7	25.86	52.5	11.34	43.57	0.19	4.2	1.6
December	63.5	17.44	78.0	25.56	50.0	9.95	42.27	0.32	8.36	1.6

The mean annual temperature works out at 67.4° F (19.6° C), or nearly the same as that of Southern Italy, though it is a much more uniform climate, the annual range of temperature being much smaller. The annual rainfall amounts to 21 inches (512.34 mm), and there are 107 rainy days in the year, but, on the whole, the climate is an unusually dry one, the average relative humidity being only 45.67 per cent. The N-E and S-W monsoons have about the same relative duration as in India, and there is usually a moderate breeze. Occasionally, however, it is visited by cyclones of great violence, in one of which (on 26th September 1900) the anemometer registered the high velocity of 21.66 Km per hour.

The station is said to be very healthy, though there is a certain amount of malaria to be met with at the end of the rains. It is to be hoped that similar spots are to be found within our own territory and that they will, if possible, be utilized as it appears probable that the campaign will prove of a most exhausting character to all engaged in it.

NOTE ON THE MYCROID BODY FOUND IN THE BLOOD CORPUSCLES IN REMITTENT FEVERS

By W LEONARD BRADDON, F.R.C.S., &c,
State Surgeon, Negri Sembilan, Malay Peninsula

(Continued from page 170)

The writer has sent a number of specimens stained by all of the processes named to the Editor of the Gazette, with a request that he would both pronounce his own opinion upon them and submit them to those whose work has made them authorities upon the physiology, the pathology, or parasitology of the blood as well as upon the microscopic appearances of bodies which it may be possible to class among mycetozoa. It may be hoped therefore that the readers of the Journal

may shortly have the benefit of these opinions upon them

The opinion of these authorities will possibly be known to other readers as soon as myself, but I have little doubt but that they will be, as must any one who examines these or similar specimens struck, as I have may been, first with the entire dissimilarity of the organism from any other of the appearances, whether pathological, or artificial, previously described in connection with the blood, and, secondly, with the close resemblance which they offer to mycelial growths. It is true that, so far, no fungi of such microscopic size have ever previously been described, certainly nothing of the kind ever been demonstrated or even surmised to be of occurrence in the blood. True also, that this element has been, specially of late years under constant scrutiny by a host of more than competent observers, by no one of whom has the mycoid parasite been signalled. It may seem bold to claim therefore for an organism for which I am alone the humble sponsor, a position which if established, must make it not only one of the most interesting, but also one of the most important, of recent additions to hæmatology. But there is no reason why mycetozoa, of even the most microscopic dimensions, should not exist equally with those which are macroscopic. Nor is there any cause *a priori*, why such organisms should not gain access to the body, and flourish there, as do some larger forms (mycetoma), although the latter do not invade the blood.

That the bodies themselves should have so long escaped notice, is a result, perhaps of a certain rigidity of procedure, in regard to the study of the blood, by which its observers have, somewhat unaccountably, chosen to bind themselves. The dry method of examination of films instantaneously fixed, and therefore altered as little as possible, has of course its obvious advantages, but it would seem that the sum of the conclusions which it is possible to reach by this method must be early reached, and that in regard to some of the elements at least, little or nothing of value has been learnt from it. I refer here especially to the blood plates, of which it is clear that those (excepting Hayem) who have described them in the text books, really know next to nothing. Yet any one who will study these elements, as observed fresh, in a suitable solution, may obtain a very clear and sound conviction of their real structure, which is, as Hayem first insisted, that of a nucleated body, intermediate in appearance, in properties, and in functions, between a red and a white blood cell. In a properly isotonic solution, such as that suitable for staining the mycoids, the colouring by the blue of the cyanoplasm of these elements occurs immediately, and there may be seen after a few minutes the gradual extrusion of this nucleoid, if not true nuclear portion from the body of the plate, which is then seen to remain as a perfectly colourless nearly flat disc of clear stroma, of perfectly circular outline, exactly resembling, in everything except size and degree of resistance, the mature erythrocyte, of which it is certainly the true and normal precursor. For, as Hayem pointed out, between the smallest colourless plates and the full grown and fully hæmaglobinised red cells, an unbroken series may be made out, in almost any specimen, showing every degree of gradation both in size, in extent of acquisition of hæmaglobin, and in strength, or power of resistance to disintegration on the part of the cell. This is not easy to be seen in merely fresh blood, in which the influences which make for decay or destruction of the corpuscles begin immediately, and soon destroy the integrity of all the elements. Nor are any of the "preserving" fluids, which are usually recommended for the purpose, of any value in the study of these processes. In the solution used by the writer, all the elements may be kept in almost perfect condition for days. In such a solution not only is the gradation in size between plates and red cells, insisted on by Hayem, easy to be observed, but the amœboid

activities of the leucocytes are long preserved, and that may be noticed, which Hayem had not seen, namely, the possession of amœboid activity by the blood plates also. If to the solution be added a little M blue, the leucocyte activities, though slowed, are not entirely stilled, and two phenomena are to be discerned in process, in most specimens of blood, and at what ever time taken, but especially, as it has seemed to me, marked at those crises of regenerative activity which occur after fever. One of these is the formation from all, but particularly the large polymorphonuclear leucocytes, of processes, single or many, which are in every respect similar to "ghosts," or the colourless stroma of red blood cells. But these they often exceed in size. Becoming detached from the white cell these bodies are really difficult to distinguish from phantoms and immature erythrocytes.

A third phenomenon, not less striking than either of these, is a slow process in the large polymorphonuclear white cells, whereby the nucleus disappears, the whole cell body is transformed into a finely granular cytoplasmic material, and this is resolved finally into a number of small segments corresponding in size and appearance to the smallest blood plates. In fact no one who should study the changes observable in the blood, by the method indicated, could fail to perceive that between the "heaps" of closely contiguous, but still discrete blood plates, and the large leucocytes whose nuclei may be seen in a state of subdivision, preparatory to complete resolution, there exists a complete series of gradations.

If the picture of an unbroken series between the small lymphocyte and the large polynuclear cell afford, as Gulland, Arnold and others seem to think, a sound reason for believing that the gradations are real evidence of change, and so far a proof that the last of these forms owes its origin to the first (and even Ehrlich is forced to admit that the transition is a definite one from the large lymphocyte to the polynuclear form)—then, the same reasoning must hold good for the discovery of Hayem (in regard to which Ehrlich however inconsistently denies its force) that between the plates and the mature red cells, a series equally unbroken exists, and is so far to be accepted as a proof that the origin of the red cell is from the plate, thus truly the hematoblast, and to which I have pointed out, is readily to be made out between the polynuclear leucocyte and the hematoblast, which must therefore be taken to be the last stage in the career of the white as it is the first in that of the red cell. To these conclusions, more fully discussed in a second part of the paper already referred to, I refer here only to show how much that is important has passed unobserved by the hæmatologist who has been hampered by a restriction always to fix and dry specimens.

Morphology—As revealed by any of the above stains the mycoids are seen to consist, according to the stage of their growth, as fine dots, irregular fine branched reticulations, and of densely packed aggregations of the same net work (the "compact" forms), resembling, when the ramifications are closely compressed, especially as seen in fresh blood, tenuous, almost hyaline masses of protoplasm—and, as I conceive them to be—true plasmodia.

The organism may occupy any position in, and any extent of the corpuscle, in the interior of which it is clearly seen to be, in most cases, completely imbedded. The disc itself is frequently greatly enlarged, its contour being then often, as in the case of occupation by the simple tertian parasite, altered, but with an even distortion. It may be wholly filled by the growth, which would then appear ultimately to burst the corpuscle, and become free. In cases heavily and chronically infected, many of the discs have more or less of their hæmaglobin discharged, but how far this may be due to a specific action, upon the part of the parasite, I am unable to say.

The number of parasites present in a given specimen of blood varies greatly. I have seen patients, in whose blood it was difficult to find corpuscles free from them. In practice as a gauge to what extent the patient may be benefiting by treatment, I am accustomed to make a rough estimate of the proportion of discs infected, by counting the number of mycoid bearing ones, and those that are healthy, in each of ten separate fields.

Not all the mycoids met with, even in one and the same patient, present the same appearance. Nor have I found it possible as yet to determine what the exact cycle or period of the growth of them may be. Nor, even in specimens in which all the forms seen appear to be of a similar or the same species or character, do they ever appear all to be at or about the same stage or degree of development. Hence I have found it impossible so far to determine a definite cycle or period of growth for them, and can only make surmise how far very rapid evolution, or multiplicity of infection, may be responsible for the simultaneous presence in the blood, of what are apparently all the different stages of mycoid development.

The clinical signs afford little help in this direction, since the fever when present (which is not always) is of an irregular remittent type and the classic "stages" of an ague are not closely imitated. Exceptional instances have, however, shown typical tertian intervals, and an experience of some thousand cases closely observed has left with me the impression that some such interval will be later determined to be that of the maturation of this parasite.

For purposes of classification, therefore, the mycoids can at present be distinguished by their form alone, and the following are the differences which I have been accustomed to record, and believe to be to a large extent specific.

(a) A branching form, of which the processes are exceedingly tenuous, and wholly unpigmented—*Mycoides tenuis simplex*.

(b) The same form is a highly compressed, or densely aggregated reticulation, of which the separate branches are undifferentiable, or nearly so—*Mycoides tenuis compactus*.

(c) A freely branching form of which the processes are thicker than the last, and about which there is usually to be seen spots or dots of fine pigment—*M. crassus*.

(d) What is apparently a similarly compressed reticulation of the latter, in which pigment is also to be seen, more in quantity, of larger particles, and of a more pronounced colour—*M. crassus compactus*.

The pigment found in association with *M. crassus* differs from that formed by any of the hæmamecoidæ. When accompanying the open reticulations, it is in exceedingly fine, always quite round, semi-transparent slaty or ash coloured particles. As seen with the compact form the particles are larger—up to a micron or more denser, but still ash coloured, and always rounded. Such particles are often to be met with free in the plasma, sometimes in great quantities, after access of fever. They seem to me to be quite different from the pigment masses produced by any of the hæmamecoidæ. Unlike the latter also they are not often conspicuous in the leucocytes.

(e) A form not freely branching, or reticulate, and unpigmented, which appears as a hyaline, mass upon the surface of erythrocytes, which its presence causes to be distorted into a twisted partly globular mass, *M. torquens*, partly globular mass. The peculiar and quite characteristic appearance on discs affected by this organism is as if the surface attacked had been grasped, and thrown into folds, by the exercise of some contractile power upon the part of the viscous looking matter of which the parasite is composed. Although the diseased surface is thus puckered, the rest of the disc appears to be both in contour and structure unaltered.

M. torquens is of all the mycoids the only one whose presence is clearly recognisable in fresh, and untreated blood. The corpuscles affected by it are at once recognised by their characteristic distortion of shape, and the presence of the parasite upon them is to be made out in a glistening mass of greater refractility than the disc, and free from colour, the divisions of which extended over the face of the corpuscle which it distorts, recall the aspect of a scar or keloid upon the skin. In addition to the more or less tenuous branches, and the undifferentiated hyaline matter of which all the mycoids are at different stages, and in different degrees composed, associated with each form, there are nearly always to be seen minute discrete portions, which seem to be quite round, and resemble spores. At times single particles, or several particles of similar appearance, are all that is to be seen in a corpuscle. They stain, it has seemed to the writer, somewhat more deeply than other parts of the parasite. As their size seldom equals half a micron, it is impossible to make out more of their structure in this stage. But as very short but quite distinct fine prolongations are to be seen extending from some of these spore like bodies, and between such short protrusions, and the longer branched filaments forming the larger parasitic masses, a series of pictures representing every stage and degree of apparent growth, is to be made out, it is not an improbable assumption that these minute particles of staining matter are really the spores from which the parasite, a mass of mycelium formed or of interlacing hyphæ springs.

Chemical nature and reactions.—Although its remarkably fine structure, and the fact almost unique in histology that it cannot be differentiated by any process of staining, begun after it has perished, or become altered by drying, would appear to point to the conclusion, that the mycoid body is something of extremely delicate constitution, a fabric of evanescent, unstable nature, easily destroyed, quite the contrary is the case. Once the peculiar reaction *intra vitam*, with methylene blue,* has been established, which is necessary to reveal its presence in the first instance, it is found to be composed of a substance, which, both in form, and other physical features, offers great resistance to change.

The blue stain absorbed at first by the mycoid body entirely disappears on prolonged exposure to air, or upon soaking in water for a few (10 to 30) minutes. It may be more readily abstracted by acid, saline, or even alkaline solution. The body then becomes again absolutely invisible, and (provided all the stain has been thoroughly removed) is not to be detected, even where it is known to be present, by any optical means. In such specimens it is again at once restored to view, by any of the stains which have been already described as effective for the purpose.

It may thus be treated, that is to say, immersed for a period of several seconds, without undergoing any impairment in its form, or receptivity for stains, in the following solutions—

Liq. ammon. fort., liq. potassæ, B. P., acid acetic glacial, dilute acetic acid, nitric acid, strong fuming, (momentarily), nitric, sulphuric, and hydrochloric acids, in 20 per cent solutions, picric acid, in saturated solution, carbolic acid, 20 per cent, tannic acid (saturated), alcohol, ether, chloroform, xylol.

Solutions of alum, saturated or dilute, remove the stain completely from *M. B.* stained specimens, and after this treatment, the mycoid is incapable of again becoming stained by any process. It is probably completely dissolved.

Ammonia does not discharge the stain from the mycoid body, although it does so from the nuclei of the leucocytes, and the diffuse stain from the bodies of the r. b. c.

Tannic acid, in saturated solution, leaves the stain unaffected, and "fast." After its use, specimens stained

* Or methyl violet, but this stain is less satisfactory.

by M R or by safranin, are able to retain the colour even on washing with alcohol, which discharges it from specimens not so treated.

Nitric acid completely decolourises all the elements in a blood film, and leaves them less receptive of the stain after washing, so that five or more seconds instead of the usual one are required to re-stain either mycoids, plates, or nuclei with safranin. Hydrochloric acid, 1 per cent solution completely decolourises all the elements also, but their staining capacity is but little interfered with after the acid has been removed by washing even when solutions as strong as 25 per cent have been employed. After this strength, the mycoids take a brown, instead of the usual pink tint, from safranin. The use of a preliminary dip in a 1 per cent solution of HCl has the advantage for safranin specimens, that the rbc, do not also become diffusely stained, as they do without it.

Acetic acid (pure) completely decolourises all the elements, and effects, if applied too long, total destruction of them. The mycoids are, after washing, however, readily re-stained, lasting even after the stroma of rbc has been largely dissolved.

Sulphuric acid (20 per cent) decolourises the mycoids but not the nuclei (or crescents), and after it the mycoid bodies can be stained but faintly, with safranin, or blue Iodine solutions, applied after sulphuric acid, produced no reaction.

Liq. potassae (half B P solution, with water) so far affects the mycoids that only the "compact" forms stain well again after it. The hue reticulations cease to be made visible.

Digested for half an hour in an artificial gastric juice, containing 0.2 per cent free HCl, and 5 per cent pepsin, the mycoids resist longer than the other elements, while their stain receptivity is still evident. The protoplasm of the leucocytes, part of their nuclei, and most of the stroma of the rbc had become dissolved, while mycoids persist.

What is the substance, of which mycoid bodies are composed?

The question is, it seems to me, so far answered by these reactions that it may be said that the material, if proteid, albuminous, is certainly not the same as that of which nuclei are constituted. It is, if like nuclear chromatin—nuclein—not exactly nuclein.

This, the fact of its unreceptivity for stains, in any except the living (or at least undried state) and the relative insolubility of it in hydrochloric acid, seem to prove. That it will not take stain from Bismarck brown, a stain for which nuclei have affinity, or for logwood, also points to a clear difference between the mycoid and true nuclear chromatin. On the other hand its staining by methylgreen (in neutral aqueous solution), is a point of similarity. In their resistance to peptic digestion, and their staining reactions generally, a near resemblance is offered to mycoids by blood plates. But the superior affinity of the latter for some stains, *eg*, gentian violet, and their less affinity for others, *eg*, methylene blue, which is displaced immediately from them by safranin, while it is retained by the mycoids, shows a certain, although it may be a minor, perhaps only a physical difference.

The marked resistance of the mycoid material to strong reagents provokes the suggestion, that it may be not proteid at all, but something allied perhaps to cellulose, or lichenin?

Distribution—The mycoid body is found in human blood, in adults as well as in early infancy. I have not, unfortunately, examined the new born.

In birds (pigeons) I have once or twice seen a considerable number of corpuscles in a single specimen possessing bodies of a structure and appearance almost identical with those of the mycoid found in human beings. They lay between nucleus and periphery and were clearly unconnected with the former. It may be mentioned that there is to be seen both in

birds and reptiles (frogs, toads, lizards) an appearance possessing some similarity to the mycoid body. There extend from the nuclei of the red corpuscles fine filaments which may reach through the cytoplasm to the periphery of the disc. These filaments are irregular, of unequal thickness, often thickened at intervals, of extreme tenacity, they are clearly derived from, and seem to be extensions of the chromatin network of the nucleus. They are best discerned, being faintly stained in M. B. K. C. solution, but may be equally well seen in films not so treated but dried and fixed in the ordinary manner by formalin, alcohol, or sublimate, and then stained with either M. B., safranin, or logwood solutions. From mycoids affecting whether human, or avian corpuscles they differ, in their fineness and scanty mass, and in their capacity to become, stained in dried specimens.

Bodies similar to human mycoids are extremely plentiful in dogs at almost any age. In cattle (oxen, buffaloes) they are extremely rare. I have in fact in the course of many hundreds of examinations, of the blood of some 250 animals, made during investigations into rinderpest and in special search for pyrosoma, and other parasites, as a matter of fact, observed bodies resembling mycoids, only in a single animal. In this beast there was a scanty number of discs, found to contain an organism of similar general appearance to the human mycoid, but having thicker branches, more sluggish movement, and less sharply stained.

In goats, among fifty or sixty animals examined, it was never seen. In pigs, six beasts examined, failed to show any. These animals were under examination during acute febrile conditions (rinderpest) as well as during health.

Morbid and clinical relations—The writer's acquaintance with the pathological effects, or associations, and the clinical manifestations resulting from, or concurrent with the presence of the mycoid body dates from 1897 and is comprised in observations made upon hundreds of native patients in the hospitals under his care, upon Europeans suffering from fever, and other sicknesses, upon the members of his own family, and in his own person.

It would be impossible, in the space which could be given in this paper, to set forth at length all the observation made.

But it may be permitted to serve perhaps, if the general result of those observations, be given.

In the first place then, it must be stated, as a fact that it is seldom that any specimen of blood is examined in whatever class of patient (in the district in which these observations are made), in which a careful examination fails to reveal at least one or two corpuscles containing mycoid bodies, on a slide. On the other hand, the value of this observation, as tending to prove that the mycoid is an innocuous—possibly even a normal or physiological component of the blood—is discounted by the fact that none of the observations have been made in quite new comers, and that a pathological agent, which when present in small numbers has no perceptible effect upon the health, may have serious ones when it has multiplied beyond a certain limit. This is true even of the hæmamebid hæmatozoa, which are (I need hardly adduce evidence here, which your readers have already had before them) frequently found in persons, in whom their presence seems to cause no disturbance.

But I have examined one or two specimens of blood in Europeans, in whom not a single mycoid body could be discovered, in many slides. The last such example, was a patient, suffering from a sharp attack of simple tertian infection. Neither at the beginning, throughout nor after his fever was there to be seen a single mycoid, although the ordinary parasite was found in plenty. This at least proves that the mycoids is not only not a necessary or constant part of the blood, but also that its presence is no necessary result of ordinary malaria.

The mycoid is particularly prevalent in the native patients who are treated in pauper hospitals. Of 445 such patients, successively admitted to the Seremban Hospital (under the writer's care) during the first part of the current year, in whom the blood was carefully examined microscopically, not one was free from mycoids. Whatever the ailment for which admission was sought, it was seldom that a proportion of less than 1 or 2 per cent of the corpuscles was found affected. Less than one quarter (122 out of 445) of these patients actually sought admission for fever. Nevertheless in more than one third of them (150 out of 445) various hæmamoëbid parasites were found (Malignant tertian, 99, simple tertian, 31, quartan, 11, quotidian, 6, mixed infections, 13). Of the 150 only 122 complained of fever, or had definite pyrexia, and of these, in 17, no hæmamoëbid parasite of any kind could be discovered. The remaining 105 represent the proportion (out of 150) of this class of patients, in whom the presence of such parasites excited no definite fever. In the 17 cases in which there was such fever, although there were no hæmamoëbid parasites, the blood was in every case found to be full of mycoids—the proportion of red corpuscles affected with them being anything up to 50, or even a larger proportion, per cent of all the red corpuscles.

(To be continued)

A Mission of Hospital Practice

TWO CASES OF SPINA BIFIDA. OPERATION—RECOVERY

By W J WANLESS, M.D.,

Miraj

Case 1—Yesabai S, female, age one month, Admitted to the Presbyterian Mission Hospital Miraj, April 4th, 1900

History—Tumour in middle cervical region, existing from birth, has increased in size until it is now twice the size of that observed at birth.

Description—Good general health. Occupying the mid-cervical region immediately over the spinal column is a pear-shaped, fluctuating, translucent, partly reducible tumour, the size of a small mango and which becomes increasingly distended when the child cries. The skin over the growth is thin and glossy. The tumour is pedunculated with a pedicle, about 2 inches in diameter, and which can be reduced by compression to one inch. A gap, into which the finger can be inserted, is found between what seem to be laminae of the third and fourth vertebrae.

The skin over the growth is thin and has a purplish hue, and is slightly excoriated at the junction of the pedicle with the skin of the region. No nerves are visible coursing over the skin.

The tumour is exceedingly tender to touch.

On admission wet antiseptic dressings of bichloride of mercury 1 in 1,000 were applied and kept wet for 24 hours, after gently cleansing the tumour and adjacent skin with soft soap and water.

April 5th—*Operation*—Anæsthetic, A C E mixture, 4 drachms on Junker inhaler. Time,

35 minutes. An elliptical incision, with long diameter vertical, was made in and 1 inch from the base of the pedicle, and the skin dissected back to its junction with the skin of the region, exposing the neck of the sac. This was ligated about half an inch from its exit from the bony opening in the spinal column, heavy catgut being used. The purse string method was used, and the neck of sac picked up with the encircling needle at four points in its circumference, without completely penetrating its wall. The tumour, which contained clear cerebro-spinal fluid, was then cut away half an inch beyond the ligature. The skin was then closed over the opening with interrupted silk-worm gut and a horse-hair drain inserted beneath it. Acetanilid was dusted over the line of sutures and a bichloride gauze dressing and cotton applied. There was no shock.

Subsequent history—The child nursed half an hour after the operation. Redressed on 3rd day and subsequently daily. A stitch abscess of the skin developed on the 8th and required the removal of two stitches. Excepting at the site of the stitch abscess the wound healed primarily. The remaining stitches were removed on the 15th, ten days after the operation, the wound having healed throughout and the little patient in good health.

Case No 2—The frequent observation that rare diseases often come in pairs holds true here. This little patient, Tookaiam M, age three months, male, was admitted April 6th, 1900, the day following case No 1.

History—A tumour mass on the lumbar region has existed from birth, having increased in size steadily, until it is about one-and-a-half times as large as when first observed.

Description—The tumour occupies what seems to be the region of the third lumbar vertebra, is the size of a small orange, globular in shape, translucent, and having a pedicle $1\frac{1}{2}$ " in circumference, compressible to about half this size. Over the summit of the tumour is an area the size of a rupee, the skin is inflamed, glossy and very thin. Tension in tumour increased when the child cries. There is an opening on the spinal column scarcely admitting the index finger.

April 7th—*Operation*—Anæsthetic, A C E mixture. Time, 20 minutes. No shock. Region prepared as in Case I. The incision in Case I was used, excepting that its long axis was placed horizontally in order to avoid infection from rectal discharges. The neck of the sac was exposed and ligated as in Case I. In addition the portion of the sac projecting beyond the ligature was sutured with an over-and-over running suture of catgut. The skin was closed horizontally and horse-hair drain inserted beneath it. The dressing was the same as in Case I and was protected by adhesive plaster and gutta-percha tissue. The wound was redressed on the 3rd day and drain removed. The wound was clean. On the 4th day serum escaped from

the wound and three stitches were removed. The remaining stitches were removed on the 11th day, the wound having healed. The child's temperature rose to 101 on the 4th day, to 102 on the 5th and on the 6th, became sub-normal on the morning of the 7th and 8th days and subsequently remained normal. Diarrhoea was present for three days from the 5th day, but subsided with the disappearance of the fever. The child was discharged on the 18th apparently in good health.

A CASE OF INSULAR OR DISSEMINATE SCLEROSIS

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THE following case of disseminate sclerosis, which came under observation from the very onset, is worth recording.

On the 28th November last, the patient felt a slight attack of giddiness, which went on increasing for the two following days. On the fourth day of his illness, the giddiness increased very much and he began to vomit and had fever, which passed off in two or three days. The objects around him, he felt, were moving, and it was for the treatment of his vertigo that he came to hospital to be treated. The patient named Dukhi, a Hindu male, aged 22 years, is a muscular man of active habit, a syce by occupation. He has no history of syphilis nor of alcoholism. There is no indication of neurotic temperament in his features nor in his family history.

On admission, the digestive and respiratory systems were normal and the pulse very slow—49 per minute. There are jerky movements of the muscles supporting the head. The head moves from side to side, remaining inclined to the right side. The movements cease when the patient lies flat on the bed, but are present while the patient sits up in bed, and the movements increase when he is being looked at and when the head is moved about, they diminish markedly when he fixes the head towards a certain point. There is also some tremor of the small muscles of the eyebrow (corrugator supercilii) and those over the upper maxillary region.

There is nystagmus of both eyes, which markedly diminishes when the eyeballs are fixed on a point, and comes out when the eyeballs move from side to side. The power of conjugate movements and of convergence is intact. No strabismus, no diplopia. The field of vision not contracted and eyesight not affected at all. The pupils are normal and react to light and accommodation. The optic discs were examined, there was a slight vascular fulness in the right one. The upper extremity shows nothing abnormal. There is tremor of the muscles of

the leg, the flexors are mainly affected, of the muscles on the front of the leg, only the tibiales antici are involved, the gait is therefore ataxic, the patient walking with the feet apart, when the feet are closed together there is some want of balancing power, which is not however increased when the eyes are closed in addition. When the patient lies on his back and is directed to lift the legs, the tremor of the muscles of the legs becomes apparent.

The myotatic irritability as indicated by knee-jerks is increased, especially on the left side, but there is no ankle clonus, no patellar clonus, no jawjerks, the superficial reflexes are normal.

No staccato speech present. The bladder and the rectum are not affected. No sensory symptoms, no sensation of coldness, numbness, "pins and needles." No trophic disturbances present. Muscular tonus a little increased over the calves, though there is no actual stiffness.

Consciousness perfect. The patient is fairly intelligent.

Remarks—The peculiarity of this case is its acute onset, accompanied with febrile reaction. The marked slowing of the pulse at the onset (49 per minute) is also noteworthy, and its significance as a sign of cerebral disease has to be considered. The febrile reaction is a phenomenon which is rather an anomaly when we remember the slow degenerative nature of the disease. The absence of scanning speech, though one of the classical symptoms, does not offer much difficulty when we think of the extremely slow course of the malady. The escape of the muscles of the upper extremity may be interpreted in the same light specially in view of the scattered nature of the lesion. The case is evidently one of that aberrant type, on the recognition of which Russell has laid so much stress in Albutt's System of Medicine.

I am indebted to Major E. A. W. Hall, M.B., C.M., I.M.S., Superintendent, Medical School, Dibrugarh, for his kind permission to make use of the case.

CASE OF DETACHMENT OF ODONTOID PROCESS OF AXIS WITH FRACTURE OF ATLAS IN A MAN WHO CONTINUED TO WALK ABOUT WITH NO SPINAL CORD SYMPTOMS AND EVENTUALLY DIED OF SOMETHING ELSE

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History—U.K. (age 23) was brought in from the country by the police for treatment and for a medical report on his injuries to the civil dispensary, Roorkee, on February 14th, 1903.

He stated that two days before, while cutting leaves for goats' food, he was attacked by some men, who hit him across the back of the neck with a heavy stick. He put up his hands to

protect himself, and his arms were broken by the same blow. The fractures had been put up at a village dispensary.

Condition—Some pain and stiffness of neck, no bruising. A typical Colles' fracture in each arm, the left compound. Some rise of temperature.

Course—Chloroform was given and both fractures re-adjusted. The compound one was aseptically opened up, some loose fragments of bone removed, thoroughly irrigated with perchloride solution, and antiseptically dressed. While under the anæsthetic I further examined the neck and rotated it fairly forcibly. Nothing was to be felt.

Two days afterwards, the arm was much swollen and the wound suppurating. The splint was removed. The arm was lightly fixed on a plain piece of wood and soaked in a perchloride bath.

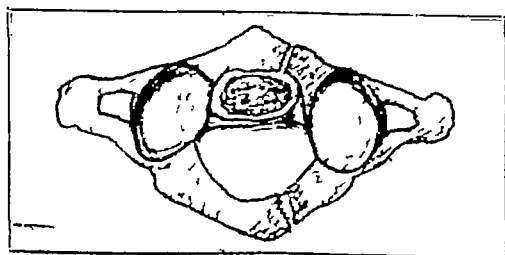
The arm improved slightly, but there was much pus coming from the wound.

A week after admission and nine days after the accident, he began to develop signs of tetanus in the joint muscles. This advanced very rapidly, and he died within seventeen hours of the first signs of tetanus in a state of opisthotonos.

During this week he had walked about hospital most days, but complained of much pain and stiffness in the neck and insisted that his neck was broken.

Post mortem—Both fractures were perfectly typical Colles', both styloid processes of the ulnæ being detached.

I was not intending to open up the neck, but on rotating the head once more I thought I felt crepitus. I therefore cut down from behind upon the vertebræ, and found the atlas broken. On opening up the posterior atlanto-axial ligament the cord was found intact. On dividing the cord and introducing the finger, I found the odontoid process loose within the transverse ligament of the atlas. I then opened up from in front and extracted the two vertebræ together. I found all the joints and ligaments intact, and no displacement of any kind, but the atlas was broken thus—



and the odontoid process was snapped off at its base from the axis, and was lying loose but undisplaced within the intact transverse ligament.

Most unfortunately I entrusted the bones to the hospital sweeper to boil. He did this so

thoroughly that he reduced them to unrecognisable ashes.

Remarks—The case is extremely interesting not only as a curiosity, but also medico-legally.

(1) On admission, owing to the typical Colles' fractures and absence of bruises, I refused to believe the man's story, and reported his injuries as being due to a fall, probably from a height out of a tree, as might happen to a goat-herd.

After the *post-mortem* I changed my mind. The cervical injuries, I think, could only have been caused by direct violence. Indirect force could hardly have produced such fractures, and must have also produced dislocation. I therefore reported that the man had probably been knocked down by a blow on the neck, and had landed with such force on his hands that the Colles' fractures resulted. He may have thought the stick produced them.

(2) It was fortunate that during the examination under chloroform I did not dislocate the bones.

(3) In all probability the man would have completely recovered from his broken neck if he had not died of something else. The ligaments holding the bones in place were absolutely intact. They had withstood for ten days the forces applied to them during life, and also fairly forcible movements on the *post-mortem* table when they had no assistance from the muscles. It is interesting to speculate as to whether the odontoid process would have reunited with the axis, and, if not, how far the man would have had a preternatural liability to dislocation of the neck.

CASE OF CEREBRAL IRRITATION

BY C. C. MURISON,

LIEUTENANT, I. M. S.

SOWAR B. S., a Rajput, 2nd Bombay Lancers, aged 25 years. I was summoned at 3-30 P.M. on the 27th December 1901, to see this sowar who was supposed to be under the influence of opium.

On entering his room I found him lying on his right side in a general condition of flexion and facing the wall. On speaking to him he gave no reply, but on shouting he frowned a little, but still did not answer. On placing my hand on his shoulder he began to toss about in his bed, but did not stretch himself, nor did he assume the supine position. He also resisted our attempts in trying to make him sit up. He kept his eyes shut and would not open them. I managed to open his eyes with a little difficulty and found that his pupils were slightly dilated and that they also responded to light slightly. His pulse was 80, regular, small volume and feeble.

There was a little saliva on his moustache and which had the smell of opium.

On questioning his comrades I found out that he had been an opium-eater for about five years. They also stated that that very morning the

patient, whilst washing his hands in a bucket of water, became giddy and fell. His forehead struck the water in the bucket. On getting up he remarked that he had hurt his forehead. Soon after this he lay down in his bed and about three hours later one of the sowars went in to wake him and found that he could not get any reply out of him, he was however tossing about in his bed. The Hospital Assistant was then sent for and who, after examining the man, sent for me.

I diagnosed the case as one of "cerebral irritation."

The patient was removed to hospital and a purge of Calomel, gr iii, and Pul jalap co, gr xxx, was given. He was also placed on milk diet.

28th December 1901 (2nd day) — This morning the attending man reported that the patient had spent a bad night, he was continually tossing about and whenever he moved, he groaned and muttered something to himself. He urinated, and his bowels were moved twice during the night in his bed.

His condition is the same as he was yesterday. Temperature 99.2°F. Pulse 84, stronger than yesterday.

29th December 1901 (3rd day) — He had a better night last night, still in the general condition of flexion, but responds to shaking and shouting. I ordered Pulv opii co, gr ii, to be given.

30th December 1901 — This morning he is a great deal better. He is partly lying on his back, says he has a bad frontal headache and wants more opium. Pulv opii co, gr ii, given this morning and gr i ordered to be given this evening.

31st December 1901 (4th day) — He is much better this morning. Complains of slight headache and is begging for more opium. Pulv opii co, gr ii, ordered to be given in the mornings and evenings.

5th January 1902 (9th day) — He has made a very rapid recovery since the last entry. He was discharged from the hospital to-day "cured." He was recommended seven days' light duty.

Remarks — The above signs and symptoms are very strong in favour of the case being one of "cerebral irritation."

The predisposing cause in this case was most probably "opium" which he had been in the habit of taking, and the exciting cause was the fall on his forehead.

CASE OF DEPRESSED FRACTURE OF SKULL WITH REMOVAL OF A TABLE SPOONFUL OF BRAIN MATTER AND RECOVERY

By AMBICA CHARAN DUTTA,

ASSISTANT SURGEON,
Berhampur Hospital

KASHIM, the patient, was a Mahomedan boy, aged about fourteen, brought to the hospital by his father for treatment of abscess (as he supposed) on the head on 22nd May 1902. It

could be gathered from the father that three days previous to admission the boy was running under a tree during a storm, when a branch fell on his head and made him unconscious for about a quarter of an hour, there was bleeding from the nose after the injury. When I examined him the patient was quite dull and apathetic, he could not speak, could not answer any question. Without paying any heed to what was asked he would look vacantly round, sometimes he muttered a few incoherent words, sometimes screamed, occasionally said a word or two to his father, never responded to any sign. There was a sort of capricious volition, he would do one thing at one time and the next moment he would show signs of vehement resistance, there was no loss of motion or sensation, co-ordination a little defective, peculiar purposeless movements, mostly of a clonic character, sometimes affecting one side, sometimes both, could be seen in various parts of the body when sitting or lying down. Reflexes normal.

Locally the left eyelids were very cedematous, so also was the scalp above. A line of depression could be made out on the left frontal eminence, passing $\frac{1}{2}$ " upwards and $2\frac{1}{2}$ " downwards, slantingly to the left. On first incision brain matter came out and I found broken fragments of bone exposed underneath, these were cautiously tilted up and removed, the fragments were all parts of the frontal bone. The left superior longitudinal sinus was in no way injured. A little more brain matter of the frontal lobe came out, the part was washed, and the skin sutured and dressed.

For the first few days he had 'fever,' the temperature ranging from 99° to 102° F, but it was soon stopped with quinine. For six days the mental condition did not improve, on the seventh day he could speak and answer questions. There was gradual improvement, but the mind was never so clear or the intellect so bright as in a healthy man. Irregular movements, though to a less extent, remained till four days before discharge, the wound healed perfectly, pulsation of the brain was visible all through. He was discharged on the 17th June 1902.

Remarks — The case is interesting for the following reasons —

It illustrates to some extent the functions of the frontal lobe having something to do with cognition and intellectual action as shown by Dr Ferrier. He removed the frontal lobe in monkeys and found the following phenomena —

"Instead of as before being actively interested in their surroundings and curiously prying into all that came within the field of their observation, they remained apathetic or dull or dozed off to sleep responding only to sensations or impressions of the moment or varying their listlessness with restless and purposeless wanderings to and fro, while not actually deprived of intelligence they had lost to all appearance the faculty of attentive and intelligent observation."

THE
Indian Medical Gazette
 JUNE, 1903

THE KASR EL-'AIN HOSPITAL, CAIRO

ON the banks of the Nile, opposite the island of Roda, between the palatial quarter of Ismaïlîyeh and that of Old Cairo, is situated the principal hospital and medical school of Egypt, the Kasr-el-'Ain. The history of this place has been most ably recorded by Dr F M Sandwith, the Senior Physician of the hospital and Professor of Medicine. He was the first Englishman to enter the medical service of the Egyptian Government. In 1883 the Board of Health proved so utterly useless that it was abolished amongst the early British reforms. At the beginning of 1884 the Sanitary Department was placed under the direction of an Egyptian Pasha and of Dr Sandwith. They found they had to supervise the control of the public health of Egypt as well as twenty-three Government hospitals, of which the Kasr-el-'Ain was the most important and best equipped. What the other medical institutions of the country must have been like at that time must be left to the imagination, when the best of them presented the appalling condition so graphically depicted by Dr Sandwith, whose description we reproduce *in extenso* as an instructive object-lesson.

"The building consisted of a quadrangle surrounding waste-land, studded with huge lebbek trees, which kept air and light from the windows. The walls contained nests of living snakes, in holes, from which the plaster had crumbled away. The ground-floor was composed chiefly of dark, damp store-rooms, for here were situated the central stores of equipment for all the Government hospitals. The pharmacy was the one bright and fairly clean place, and near by were several bins full of mouldy sulphate of iron, which seems to have been a favourite antiseptic against cholera. The patients' wards, as now, were in the upper two stories, but so closed in by doors and windows that there was an overpowering smell, and practically no ventilation, for most of them were very small, measuring only 17 feet x 13 feet. The floors were made of broken, ill-fitting 'ballats,' which, being porous, soaked in any septic liquids, while the rough walls and wooden ceilings were infested with

bugs. The beds were in the same condition, for they were wooden planks resting on non tiesels, so that the patients often preferred to sleep in the corridors at night to try and escape from the vermin. There was practically no furniture, except dirty tin drinking pots and platters. At night there were no candles available, and the corridors were dimly lighted by a narrow wick floating in oil. But the pervading horror of the hospital was the smell from the privies, which were built into the walls, and communicated directly with huge underground culverts, blocked at low Nile, and at other times allowed to empty themselves into the river. The so-called drains from the dissecting room and dead-house also flowed into the Nile about a mile above the intake of the water-supply of the city. Water was somewhat scarce in those days, and was brought upstairs by men carrying goat-skins from a tap near the entrance of the hospital. The filtered water-supply was unknown. A Turkish bath-room and kitchen stood where the *post-mortem* room now is, the kitchen being composed chiefly of cauldrons resting on brick uprights between which there was an open fire. In the middle of the kitchen there was an open hole in the floor, leading into a cess-pool, for the reception of offal and bones. The food was all stewed, and was by no means bad. There were two meals, at noon and at sunset, consisting of bread, which was almost black, meat or fowl, rice, soup and vegetables. The laundry was in the open air, supplied with muddy, cold water, and a series of boilers in which the water never boiled. It was therefore not to be wondered at that linen often came back to the wards covered with lice.

Perhaps it is not surprising that hardly any single soul ever went to the hospital of his own free will, the exception being blind beggars who were driven there by poverty. Even they had to go through the trouble of visiting the Governor first in order to get a ticket of admission.

The public of Cairo firmly believed that the hospital was merely a prelude to the cemetery, and that the sick were beaten and robbed by the attendants, and then poisoned by the doctors. And yet the number of hospital patients was often 400, made up of soldiers, policemen, Government employes, prisoners, foundlings, hospital children, idiots and prostitutes, who sometimes numbered as many as 200, and converted their section into a pandemonium. All these different

classes were kept there by order of the Governor. The hospital children numbered thirty-five, and were in perfect health, only living there because they had no home and no one had seen fit to adopt them. No attempt was made to educate them, though some had reached puberty. Needless to say, no respectable woman ever applied to the hospital for advice, and no parent ever left his child in the wards for treatment.

Six native professors of the school paid daily visits to the wards, divided into sections of surgery, medicine, ophthalmia, skin and venereal diseases, prostitutes, and women applying as a forlorn hope for operative midwifery * * * Injuries and diseases of the most trifling character were sent by the police, and had to be admitted, and there was a complete absence of severe surgical cases, with the exception of scalp injuries, a few bullet wounds, elephantiasis cases and some calculi awaiting lithotomy. There was no nursing, the attendants consisting entirely of worn-out old soldiers, who had been dismissed from the army, with, of course, no moral control over the patients. Serious cases could not be kept in bed, and trivial cases were allowed to lie in bed all day if they wished it. There was a systematic absence of clinical teaching, note-taking, temperature records, urine testing, or any thorough physical examination. The medical diagnosis seldom advanced beyond 'anæmia' or 'gastric catarrh'. The dispenser accompanied the doctor on his round, wrote the prescriptions on a sheet of paper, copied them afterwards into a book, and then administered the medicine of the twenty-four hours all in one dose. The professors of surgery were quite ignorant of cleanliness and antiseptics, and were so fearful of anæsthetics that most major operations, including lithotomy, were usually done without them.

Three hundred pounds worth of surgical instruments lay neglected in the hospital, because no one in Egypt was capable of repairing them, until we introduced an English instrument-maker.

Refractory patients were punished by confinement and by chains, anklets and hand-cuffs. The unfortunate prisoners were not guarded, and were therefore obliged, whatever their illness, to wear chains round the ankles, six feet long, weighing 5½ lbs. In these chains they lived or died. There was no out-patient department, and *post-mortems* were never made

unless the law specially required it. Stories of medico-legal cases were not such as to enhance the dignity of the profession, and several professors of the school accused their own colleagues to me of taking bribes in connection with these cases, and with the examination of Government employes for pensions, of which there used to be about 2,000 every year * * * *

The condition of the Medical School in 1883 was not a whit more satisfactory than the state of the hospital. There were about ninety students, of whom one-fourth lived at home and the remainder slept in most insanitary dormitories at the school, where typhus broke out among them every year and generally carried off one pupil. Some work was done in the dissecting-room, where the chief demonstrator was one of the servants. There were no microscopes, no pathology, no laboratories and no practical work of any kind. The physiology lectures were delivered by an Egyptian professor, lately appointed to the post, the sole grounds for doing so being that twenty years before becoming a military surgeon he had read a thesis in France on a physiological subject. The one European member of the school was G. Bey (a Frenchman, 1811-1899), who, in spite of a residence of fifty-two years in Egypt, had never mastered sufficient Arabic to dispense with an interpreter at his lectures on chemistry and toxicology."

The most glaring defects were promptly remedied, but it took time before a properly-selected staff could be obtained, and the management was hampered at every turn for want of funds during Egypt's years of impoverishment. Nevertheless, British energy, patiently and unflinchingly applied, ultimately succeeded in re-creating every single department of the hospital and medical school, until now they are institutions, of which any nation might be proud. This regeneration of the medical service, procuring humane and up-to-date relief for the sick and efficient teaching of the students, is not the least of the triumphs effected by the British occupation of Egypt. So flourishing is the school that, a couple of years ago, the members of the staff published their first volume of Records, containing articles of high scientific and clinical importance, and it is only a few months since the *savants* of Europe assembled in Cairo for the first Egyptian Medical Congress, the meetings of which were held in the buildings of the *Kasr-el-Ain* Medical School.

Medical Officers on their way to Europe from India might with advantage break their journey by a run up to Cairo for a few days to see the wonderful collection of human remains belonging to a people who lived prior to Menes, the reputed first king of Egypt, *ie*, at least before 2500 B C, which have been classified and investigated so skilfully by Dr Elliot Smith, the Professor of Anatomy. These remains belong to a period long before the art of making mummies was known, yet here we see specimens of the lens of the human eye preserved through all these centuries, examples of simple and compound fractures, and the splints then used, urinary calculi, and even prolapse of the uterus and rectum. In fact, we have proofs that in those remote ages the flesh was hard to much the same ill as in modern times.

In the Physiological department, Professor Wilson is to be found experimenting on scorpion and serpent venom, on problems of the blood and other research work. The Pathological department, under Professor Symmers, contains a splendid collection of beautifully preserved specimens, including a remarkable series of bilharzia-infected tissues. Here also is to be seen the unique collection of parasites belonging to Dr Looss, the Professor of Helminthology.

In the hospital there are excellent sterilising and operating rooms, in which a great deal of operative surgery is performed by Messrs Madden and Milton, and by the ophthalmic surgeon, Dr E Fischer, who is a brother of Major Gordon Fischer, RMS. Both the hospital and medical school are under one Director, Dr H P Keatinge, who is assisted by a hospital committee and by a school committee, consisting of the staff.

UNDULANT FEVER

OF late years undulant fever, that fever which bears so many geographical names, has received a considerable amount of attention in India. Cases have been reported in Bombay, Calcutta, Delhi, Hissar, Mian Mir, Nowshera, Rohtak, Sabathu, Simla, the Swat Valley, and possibly also Assam. Accordingly we turn with interest to the paper in *The Practitioner* for April by Surgeon F J A Dalton, of the Royal Navy, who has been studying the disease in Malta during the past three years. In order to prevent any possible misunderstanding he commences with the following terse and precise

definition — "A pyrexial disease, endemic in certain localities, having a long and indefinite duration, with a tendency to undulatory waves of temperature." Surgeon Dalton rejects the theories of etiology current in Malta, which ascribe it to the insanitary condition of the tideless harbours of that island, or to the bite of some infected insect, such as a mosquito or sandfly. He considers the disease to be airborne, yet he is not prepared to accept Hughes' view of an aerial faecal poison. His other conclusions are that the organism is very widely diffused in localities where the fever is endemic, attacking people under dissimilar social and sanitary conditions, and that persons in health require a large dose to produce in them the characteristic symptoms. Granted a lowered bactericidal power from fatigue, chill or disease, and supposing the organisms enter the system in sufficient quantity and for a length of time sufficient to overcome the bactericidal powers of the blood, then the *Micrococcus melitensis* enters the spleen, from which there is as much difficulty in dislodging it as *it* found in gaining access to this suitable nidus.

In Malta it has been found that one attack usually confers immunity. Young children and old people seldom suffer, the fever is most prevalent between May and August, *ie*, when there is least rain, with variable winds and dust-storms. The incubation period is given as from 10 to 16 days, though certain observations tend to show that it varies from 5 to 15 days. The pathological changes noted by Surgeon Dalton were — Cardiac degeneration or atrophy, with the passive pulmonary congestion associated with a failing heart, and a much enlarged pulpy spleen. There was usually congestion of the brain, liver and kidneys, but the alimentary canal was unchanged throughout. Microscopically the spleen showed increase in lymphoid tissue, with a multitude of scattered single micrococci. This slow-growing *M melitensis* does best in alkaline media, *eg*, gelatine-agar, or bouillon of an alkalinity—10 (Eyre). Its extreme susceptibility to the reaction of media has to be carefully observed, otherwise failures and disappointments may be expected. The best temperature for growth is 37° to 38°C, but the range varies from 20° to 40°C.

The symptoms are fully described, and charts of typical cases are appended. Special stress is laid on the symptoms of neuritis, which occur in

50 per cent of the cases. As regards effusion into joints there is a discrepancy between the 40 per cent of Hughes and the 1 per cent of Dalton. Without Widal's test the differential diagnosis may prove extremely puzzling. But the sedimentation—or agglutination—test has proved both reliable and satisfactory. The reaction can usually be obtained on the fourth day of fever, sometimes earlier, seldom later than the sixth day. Surgeon Dalton has found a dilution of 1 in 50, with a time-limit of half an hour for the agglutination test, to be a reliable, easy and rapid method of diagnosis. Cases with high agglutinating powers usually recover more rapidly than those with a low agglutinating power. The question of treatment is fully discussed. Briefly it may be said that the drugs used are much the same as in enteric fever, so also with the cold pack for the pyrexia, but there is a vast difference as to diet in the treatment of the two diseases. In undulant fever Surgeon Dalton insists on a generous diet. For the first two or three days he keeps patients in bed on a liquid diet. When the diagnosis is confirmed, and the tongue cleans with the use of chlorinated quinine and salines, then he allows eggs, bread and butter, rice pudding and several pints of milk. A few days later he adds fish, chicken or meat. Stimulants are not needed except for heart failure. Patients with a temperature below 102°F are allowed out of bed for the greater part of the day, but each case must be dealt with separately in this matter, and no hard-and-fast rule can be laid down.

PARAFFIN INJECTION FOR NASAL DEFORMITY

ALTHOUGH it is a dozen years since this procedure was advocated, yet it is only comparatively recently that it has been much practised. Paraffins have been used with melting points varying between 104°F and 135°F. The disadvantage of a low melting point is that the paraffin is apt to set in the needle, while the disadvantage of a high melting point is that the paraffin becomes too diffusible and invades tissues in which it is not wanted. Consequently a paraffin with a melting point between 115°F and 120°F is probably the most useful. It is a good precaution to have an assistant to keep up steady pressure over the surrounding area in order to prevent excessive infiltration. Celloidin

or thin sheet lead may be used as adjuncts for this purpose. After the injection ice should be applied to the part to hasten the hardening of the paraffin. In many cases cocaine or eucain may be used in place of chloroform. Care must be exercised as regards cleanliness, antiseptic precautions and sterilising, because a few accidents have been recorded, *e.g.*, venous thrombosis and pulmonary embolism. Gersung employs "soft paraffin injections" where he desires to imitate soft connective tissue. This injection is composed of one part of soft paraffin to four parts of olive oil, by measure. Depressed scars in the face and neck, and hemiatrophy of the face have been treated in this manner.

BENGAL LUNATIC ASYLUMS

IN the Triennial Report on the Lunatic Asylums in Bengal, 1900—1902, it is stated the daily average sick and death-rate show that Berhampore seems to be comparatively much healthier than any of the other asylums in the province. Government is then to be congratulated on its selection of Berhampore as the central asylum for natives of Bengal. There has been a steady rise in the number of lunatics from 926 in 1900 to 1,009 in 1902, at the close of which year there were 1,033 insane persons under detention in the Bengal asylums. The proportion of criminal lunatics to the total asylum population averaged over 50 per cent. There is the perennial complaint of want of accommodation in the European Asylum at Bhowanipore. It is hinted that this is due to a considerable demand for the admission of mild cases, "for which the asylum was not originally intended" as a matter of fact, there is not usually much strain on the accommodation provided for paying patients. Where the shoe pinches is the demand for the admission of pauper lunatics, the accommodation for whom is shared by criminal lunatics. Government has recently provided additional accommodation for females, and it is believed that the same will soon be done for the males. But it is questionable whether Bhowanipore is a suitable place for European and Eurasian lunatics throughout the year. The climate is a trying one during half the year, the place is too much shut in, and the grounds are too small to admit of suitable out-door employments and recreation. Moreover the buildings are not up to-date, nor are they so arranged as to admit of isolated observation.

wards for new admissions, for a separate hospital building, or for the separation of mild and promising cases from those that are hopeless or objectionable

The proposal has been mooted more than once to have a central European asylum for all India, situated near some large hill station, with plenty of land for a farm, a dairy, a market garden, a laundry, workshops, and other means of employment. In this way the institution could be made self-supporting to a large extent, while the patients would have the benefit of open-air occupations in a bracing climate all the year round. The improvement in the results would be proportionately gratifying. There would be more rapid and more numerous recoveries, and fewer cases of moody melancholics and hopeless demented, of whom there have been too many instances in the past, largely owing to a monotonous and confined existence in an enervating climate

LONDON LETTER

BILHARZIA DISEASE IN INDIA

THERE can be no doubt that the Bilharzia has been detected in India. Lieutenant-Colonel Hatch, in a letter recently addressed to the *British Medical Journal*, mentions several cases that had come to his knowledge in Bombay. They appear to have been imported cases, and so far as I know there is no record of any instance of the disease being contracted in any part of India. Bilharzia disease was fairly common among British soldiers serving in the South African War. It was contracted both in Natal and the Transvaal, in both of which colonies the malady was known to exist before the commencement of the war. The district of Rustenberg in the Transvaal furnished a large proportion of cases. Several regiments returning to India carried the disease with them, and numbers of cases have recently been admitted into the Royal Victoria Hospital, Netley, from India. They all, without exception, manifested the first symptoms of infection in South Africa, and no case has been admitted up to the present time, in which the characteristic hæmaturia made its appearance in India. The question arises—will the Bilharzia become established in India as a pathological exotic? Myriads of ova have escaped from the bodies of the infected. Have these ova found

the appropriate conditions of host to serve as the proper nidus of intermediate development, and have the media or cercaria of the parasite found entry into human hosts? It behoves Indian medical practitioners to keep their eyes open for such a contingency and to report cases of Bilharzia infection of the European or Native if they encounter them

MOOR POINIS IN BILHARZIOSIS

There are several matters connected with the natural history of the Bilharzia and the pathology of Bilharziosis which demand investigation. More exact knowledge is required regarding the habitat of the worm in the body and the migration of the ova, particularly whether they are carried by lymphatic and blood vessels to other organs and tissues than those in which they are produced. The circumstances of the extra-somatic life of the organism are almost unknown, and medium and channel by which an entry into the human body is effected. The duration of the life of the adult worm is still to be ascertained. So long as it retains life and reproductive power, old lesions are likely to remain unrepaired and new lesions will probably arise. Cases have been known, in which symptoms of Bilharziosis persisted for many years after any possibility of fresh infection existed. Development of the ovum to maturity in the tissues or organs of the body is highly improbable, and in such cases persistence of life of the worm or worms is the only reasonable explanation of persisting shedding of ova and persisting symptoms. Of the fact, and time and manner of spontaneous recovery we know nothing, nor have we discovered any means of killing the parasite or ova *in corpore*. Extract of male fern uterine, ichthyol, thymol and methylene blue have been tried but without effect. Much therefore remains to be done to perfect our knowledge of the *Bilharzia hematobium* and of Bilharziosis

A MALARIA COMBINE

The term "combine" has come into frequent use in commerce. It signifies a union of capitalists and accumulation of capital for the purpose of promoting large undertakings in order to secure a monopoly or to gain an advantage in competition. According to that excellent periodical *Climate* a "combine" or association for the prevention of malaria is being organised. "Union is strength," and if united effort in this direction is strenuously and effectively made, the results cannot be otherwise than important and bene-

* I have seen cases in the Station Hospital for European troops in Calcutta.—ED

ficial The loss of health and life caused by malarious "disease," especially in the tropics is immense, and *Climate* is not wrong in giving malaria "the first place amongst the dangerous diseases which are found throughout the tropics" Now that our information regarding the causation of so-called malarious diseases is so definite and clear, special preventive measures have been replaced on a more rational and promising basis, labour and money are requisite to apply them. It has been shown how labour may be most usefully employed and money most profitably expended in the crusade against malaria, and an association of sufficiently influential, earnest and enthusiastic persons initiating and persistently agitating a movement of this kind ought to accomplish great things. The antitubercular campaign is another example of a combined effort to combat a very wide-spread and deadly infection. If the public mind is convinced of the solidity of all scientific grounds on which enterprises of this sort are founded, there will be no lack of sympathy and help.

15th April 1903

K McL

Current Topics.

THE LATE SURGEON MAJOR GENERAL W R RICE

SURGEON-MAJOR-GENERAL WILLIAM ROCHE RICE, M.D., CSI, who was Surgeon-General of the Indian Medical Service and Sanitary Commissioner to the Government of India from 1890 to 1895 died at Brighton on the 27th March, in his seventy-first year.

He came from county Kerry, was educated at Queen's College, Cork, and Queen's University, Ireland. In 1856 he graduated as M.D., took his M.R.C.S., and entered the Medical Service (Bengal) of the Hon'ble East India Company. He arrived in India a few months before the Mutiny, got the medal for military service during that year, was for many years Civil Surgeon of Jubbulpore, was thence promoted to Inspector-General of Civil Hospitals in the N-W P., and became Surgeon-General in 1890. The CSI was conferred upon him in 1892, and he also got the Jubilee Medal. He was an Honorary Physician to Her late Majesty from 1896 till the time of her death, and since that he acted in the same capacity to the King.

THE LATE DEPUTY SURGEON GENERAL J F SHEKLETON

THE death of Deputy Surgeon-General J F Shekleton is announced. He was Assay Master

and Acting Mint Master in Calcutta. He came out to India in 1845 in the service of the H E I C, and served with the Bombay Horse Artillery in the Punjab Campaign of 1848-49, being present at the siege of Multan, the battle of Gujarat, and the occupation of Peshawar. After he retired he became Secretary and House Governor of the Bristol Royal Infirmary.

THE LATE LIEUTENANT SIME, I M S

LIEUTENANT SIME, I M S, was killed in Somaliland when Colonel Plunket's force was nearly annihilated. Lieutenant Sime was attending to a wounded Hospital Assistant when he was shot through the shoulder and head.

GLASGOW UNIVERSITY GRADUATES

The Bellahouston Gold Medal for eminent merit in thesis for the M.D. degree, has been conferred by the University of Glasgow on Captain George Lamb, I M S, and on Captain W. Glen Liston, I M S. Only one other similar honour was conferred at the graduation ceremony on the 21st April 1903.

THE DIETARY OF THE NAVY

INSPECTOR-GENERAL A. TURNBULL, R.N., M.D., has published an instructive pamphlet on "The Victualling of the Royal Navy, Past, Present, and Future." He deals with the dietary of our sailors from 1486 onwards.

LADY DUFFERIN FUND

THE Lady Elgin Zenana Hospital at Gaya has received a contribution of Rs. 15,000, owing to the liberality of Babu Baldeo Lal Nakphopha.

MITFORD HOSPITAL, DACCA

THE Mitford Hospital, Dacca, has been presented with a sum of Rs. 24,000, to be utilised for the construction and equipment of a department for out-patients. The donor is Babu Hatendra Lal Rai.

FEVER HOSPITALS IN MANCHESTER

IT is over one hundred years ago since the city of Manchester started a fever hospital, the date, to be exact, was the 27th May 1796, when the "House of Recovery" was instituted. This was a euphemism to avoid speaking of "fever wards" or of a "fever hospital," which would have alarmed the public. The result proved most satisfactory in diminishing typhus fever in the insanitary areas of the city. The inception and carrying out this idea of a fever hospital was due to an enlightened physician of the town named Dr. Ferriar, who began, in 1791, urging the authorities to adopt sanitary precautions in the poorer quarters against typhus and other fevers—*The Medical Chronicle*.

POISONING IN BENGAL

IN the Annual Report of the Chemical Examiner, Bengal, for 1902, Major C H Bedford, M D, I M S, again draws attention to strychnine having been administered by mistake for santonine as a remedy for worms. Under existing conditions in Bengal, where anyone may practise medicine, such unfortunate occurrences may be expected. Mention is made of a Hindu who dropped down dead in the street, in whose stomach one ounce of crystals of strychnine were found.

The viscera of 556 individuals were examined, and poison was detected in 258 instances, or 46.40 per cent. There was a marked increase in the detection of poisons in the Patna and Chittagong divisions, in Rajshahi, Orissa and Chota Nagpur.

The opium cases were nearly all suicidal, as is usually the case in Bengal, but two homicidal cases were detected. Another rarity was the use of arsenic in two cases for the purpose of facilitating robbery.

CONGRESS OF HYGIENE

THE Eleventh International Congress of Hygiene and Demography will be held at Brussels between the 2nd and 8th September. Information can be obtained from the Secretary of the British Committee, Dr Paul F Mohline, 42, Walton Street, Chelsea, S W.

CONGRESS OF MEDICINE

THE Fourteenth International Congress of Medicine was held at Madrid in the last week of April, under the patronage of King Alphonso XIII and of the Queen Regent.

TROPICAL SECTION, B M A MEETING

CAPTAIN LEONARD ROGERS, M D, I M S, now at home on leave, has been elected one of the Honorary Secretaries for the Tropical Section of the British Medical Association Meeting, which will be held at Swansea this year. The subjects chosen for discussion are—(1) The Disposal of Excreta in the Tropics, introduced by Dr W J Simpson, who was formerly the Editor of the *Indian Medical Gazette*, (2) Leprosy, its Etiology, Histology and Treatment introduced by Mr Jonathan Hutchinson, who recently made a tour in India specially in connection with this subject, (3) Trypanosomiasis in Man, introduced by Dr Manson, whose book on *Tropical Diseases* is so deservedly popular. Although these are the subjects specially selected for discussion, papers on any other subject connected with Tropical Medicine and Surgery will be received in this section.

DEATHS FROM WILD ANIMALS IN THE CENTRAL PROVINCES

IN the Central Provinces the deaths among human beings from wild beasts and snakes was

the highest ever reported in 1901. In 1902 the total mortality from these two causes was 1,817, which comes next to the record of 1901. Last year the deaths from snake-bite rose to 1,304, which is the highest figure ever reported, but the deaths from wild beasts were only 513 as compared to 795 in the year previous.

Raipur, Chanda and Sambalpur have the unenviable notoriety of showing most deaths from wild animals, nearly 70 per cent being caused by tigers and leopards. There were 56 deaths from rabies due to bites from jackals, 34 deaths caused by wolves and 38 by hyænas.

The greatest mortality from snake-bite occurred in the Jubbulpore division. Calmette's anti-venime is reported to have been used successfully, but no conclusive proof of this was reported.

In 1902 the number of cattle killed by wild animals was 14,138, which is the greatest number ever recorded, though there has been a steady increase of late years.

This tendency is ascribed in part to more accurate reporting and in part to the gradual disappearance of horned game. Packs of wild dogs seem to be working great havoc both amongst horned game and cattle.

For certain man-eating tigresses the reward has been raised to Rs 500. The reward for a leopard is only Rs 10, but this is going to be enhanced to Rs 20, when considered necessary. In the same way the reward for a wolf will be increased from Rs 5 to Rs 10. As wild dogs are so difficult to track and kill, the reward has been raised to Rs 15.

DEATHS FROM WILD ANIMALS IN THE UNITED PROVINCES

IN the United Provinces the loss of human life caused by wild animals and snakes is said to be steadily decreasing, but the number of cattle killed has risen from 4,931 to 6,050. Wolves appear to exist in considerable numbers still in the Rohilkhand and Allahabad divisions, and in Budaun, but they have now been almost exterminated from the Cawnpore district. Fifteen persons bitten by a mad jackal in the Fyzabad district were sent to the Pasteur Institute at Kasauli. Municipal and District Boards have been authorized to pay the travelling expenses of indigent persons going to Kasauli for this purpose.

Review

Tropical Diseases—By PATRICK MANSON, C M G, M D, LL D. New and Revised Edition, 1903. Cassell & Co.

The first edition of this most excellent book was reviewed at some length in the columns of the *Indian Medical Gazette* for September, 1898,

when we heartily welcomed the appearance of an up-to-date handy manual on the diseases of warm climates. The first edition was published in April 1898, it was reprinted in June 1898 and again in September 1899. A revised enlarged edition was issued in June 1900, and reprinted in November of the same year. Now we have another revised enlarged edition in March 1903. Such a record shows the growing popularity of the author's work, the appearance of which served to form a landmark in the study of tropical medicine, to which it gave a marked impetus. This new edition serves to emphasise the immense activity which has prevailed during the past five years, during which so many schools and classes of tropical medicine have been formed in Europe, and so many commissions of investigation have been despatched by the Governments of Great Britain, India, America and Germany, as well as by private enterprise. Unfortunately, though, the solid progress made has in nowise been commensurate with the zeal and activity everywhere displayed.

The section on Malaria has been considerably altered since the first edition. For one thing we prefer the better arrangement and heading of the paragraphs, which makes reference easier. Fresh matter and illustrations have been added on the subject of the malaria parasite, mosquito cycles, and zoological affinities of the parasite, and the term *plasmodium* is definitely rejected. New methods are given for preparing and staining the blood, and there are several alterations in the nomenclature and columns of the Tabular Statement of the characteristics of the various malarial parasites. We notice that amblyopia takes the place of amaurosis, the commoner though less precise term, in reference to the visual defects usually ascribed to malaria or quinine. The statement is again repeated that "no vertebrate animal, except man, so far as we know, at present is subject to malaria." We should much like to have the views and experience of medical men and veterinary officers in India on this point. We have distinct recollections of a favourite terrier that suffered severely from malarial fever of an intermittent type in a very malarious place on the confines of Burma. The dog suffered from an enlarged spleen during the illness, it became intensely anæmic, and showed all the signs of malarial cachexia. It recovered on the usual treatment of quinine, followed by iron and arsenic, and careful feeding. We have also recollections of horses in the Punjab suffering from a very good imitation of 'intermittent fever, presumably malarial, where anti-malarial remedies seemed to prove efficacious. However, both these recollections date back to a period years before the blood examinations for the hæmanceba were practised. An entirely new chapter, with excellent illustrations, has been added on the mosquito, and the portions dealing with ætiology, distribution, and prophyl-

axis have all been modified by the finer attitude taken up regarding the mosquito theory. The ubiquitous mosquito is also the cause of several modifications in the chapter on Yellow Fever. Of course the recent experience of anti-typhoid and anti-plague inoculations is incorporated. We are sorry to see the reference to the cases of *pestis ambulans*, reported by Drs Simpson and Cobb, again alluded to seriously under the heading of intensification and attenuation of the virus. The conclusion arrived at generally in Calcutta at the time was that these investigators had discovered a mare's nest. There is also another blemish in the repetition of Sambon's *Siniasis* as a germ disease, no further proof being produced. There are new chapters on the Spotted Fever of the Rocky Mountains and on Trypanosomiasis.

Dr Manson regards *Kala-azar* as a disease quite *sui generis*, and throws out the hint that it may prove to be a form of Trypanosomiasis.

In fact, in spite of the author's endeavours to prevent this hand book becoming too bulky, the work of recent observers has obliged him to increase the section on Fevers from pp 220 of the first edition to pp 302 of this one.

The second section is not much changed, except as regards some addition to the Chapter on Sleeping Sickness. Section III on abdominal diseases is practically the same. We are rather surprised that the information quoted as regards Haffkine's injections is not brought up beyond 1895.

Section IV on the infective granulomata is also little altered, but there are a good many alterations and additions in Sections V and VI on animal parasites and on skin diseases. These, however, we must leave to the reader to find out for himself.

Elementary Hygiene for Indian Students —

By CHARLES H. BEDFORD, M.D., D.Sc., IN PUBLIC HEALTH (EDIN. UNIV.), I.M.S. S. K. LAHIRI & Co., 54, College Street, Calcutta, 1903.

THIS little text-book, containing about a couple of hundred pages, has been written specially for the First Examination in Arts, indeed it closely follows the special syllabus of hygiene prescribed by the Calcutta University. The idea is to instil the first principles of hygiene into the rising generation, at an age when the mind is more receptive of new impressions and to some extent more retentive of new ideas, and thus in due course to leaven the whole educated population with proper sanitary ideals. It is more probable that the ignorant masses could be influenced to habits of greater cleanliness through the precept and example of their own fellow countrymen, than by either the coercion or the example of Europeans, whom they regard as more or less mad in their mode of life.

The educational authorities are to be congratulated on their endeavour to instil a work-

ing knowledge of the elements of hygiene into the youth of Bengal. Such knowledge should prove infinitely more valuable for their well-being than proficiency in conic sections or the binomial theorem, or than even the power of perorating in Addisonian English. After a chapter on the elements of anatomy and physiology, expressed briefly and in simple terms, Major Bedford devotes a chapter to the important subject of a pure water-supply. He lays special emphasis on the spread of cholera, enteric fever, dysentery and bowel-complaints generally through the agency of contaminated water. We wish he could have found space for a warning note against a not infrequent custom amongst Muhammadans in Eastern Bengal. We refer to the burying of corpses on the banks of tanks and rivers, and the equally bad custom of Hindus of throwing partially burned corpses and carcasses into rivers and khals.

Then, again, in Eastern Bengal an almost incredible proportion of the population is infested with skin diseases and intestinal parasites, as the returns of Mufasal dispensaries prove year after year. These diseases are entirely due to polluted tanks, in a country where the population of vast areas of alluvial land is entirely dependent on tank water for drinking purposes. This point also might have been emphasised. Next there follows an equally good chapter on air and the necessity for pure air. Due reference is made to the impure air of the native sick-room, and it might have been as well to condemn similarly the customs of the native lying-in room, where the unfortunate mother and infant are too often deprived of light, fresh air, and cleanliness. The ensuing chapters deal with local conditions, food, disease, personal hygiene, waste and impurities, vital statistics and sanitary inspections, which all receive due attention.

Major Bedford has adopted the excellent idea of supplementing his text with quotations of sanitary principles from Indian sources, *eg*, the Laws of Manu, Institutes of Vishnu, Panchatantra, Apastamba, Madhab Nidāna, Zend-Avesta, &c. The book deserves a much wider circulation than merely amongst school-boys and candidates for the F. A. Examination. It might with advantage be used by Municipal Commissioners and Municipal Overseers, District Inspectors, and Sub Inspectors of Vaccination, &c, who have not had the advantage of any training in the elements of hygiene.

A Handbook of Surface Anatomy and Landmarks—By BERTRAM C. A. WINDLE, F.R.S., SC.D., M.D., M.A. 3rd Edition. H. K. LEWIS, London 1902.

THE second edition of this little book was the joint work of Professor Windle and Mr. Manners-Smith. It was reviewed in the November issue of the *Indian Medical Gazette* for 1897. For the

third edition Professor Windle is alone responsible. Both as to the number of pages and the text the two editions are nearly identical. In the present edition three pages and one diagram regarding the fissures, convolutions and lobes of the brain have been suppressed, and a couple of pages on the relations of the viscera to the abdominal wall have been added. There are sixteen diagrams, all of which are clear and good. The book is intended mainly for the use of first and second year students, for the benefit of whom the relation of structures to each other and to the surface of the body are described in a clear and simple fashion, reference being made to the chief surgical and medical landmarks.

The International Catalogue of Scientific Literature—Physiology, Part I. HARRISON & SONS, 45, St. Martin's Lane, London 1902. Price, one guinea.

THE first annual issue of this gigantic undertaking has appeared under the auspices of the Royal Society of London. The branches of science included in this catalogue number seventeen—Mathematics, Mechanics, Physics, Chemistry, Astronomy, Meteorology, Mineralogy, Geology, Geography, Palæontology, General Biology, Botany, Zoology, Human Anatomy, Physical Anthropology, Bacteriology, and Physiology. The section on Physiology includes Experimental Psychology, Pharmacology and Experimental Pathology. Each complete annual issue of the catalogue thus comprises seventeen volumes costing £18. Separate volumes can be obtained at prices varying from about ten to thirty-five shillings, *eg*, Mechanics, 10s. 6d.; Meteorology, 15s.; Zoology, 37s. 6d. The stream of scientific literature is so continuous, and the landmarks of science are so constantly shifting, that such a work of reference should prove most helpful to those who make a study of special subjects.

A catalogue for scientific papers was proposed as far back as 1855, but international co-operation for the preparation of a complete index of scientific literature was first considered by the Royal Society in 1893. An International Conference was held in London in 1896, and since then there have been several other meetings, which have culminated in the issue of the present work, which was commenced on the 1st January 1901. Representatives of the following nationalities have been present at these International Conferences—Austria, Belgium, Canada, Cape Colony, Denmark, France, Germany, Greece, Hungary, India, Italy, Japan, Mexico, Natal, the Netherlands, New South Wales, New Zealand, Norway, Queensland, Sweden, Switzerland, the United Kingdom and the United States. The supreme control over the catalogue is vested in an International Convention, and such Conventions will be held in 1905, 1910, and at intervals of ten years afterwards.

The International Catalogue of Scientific Literature—Physics, Part I Price, one guinea

LIKE the other volumes of the series this one contains (a) Schedules and Indexes in four languages, viz, English, German, French and Italian, (b) an Authors' Catalogue, (c) a Subject Catalogue. This system enables the student of any subject to study the classification in the language with which he is most familiar. Moreover, in cases where he may be in doubt as to the meaning of a word in any of the four languages, he can refer to the corresponding entry in another language. The various headings and sub-headings throughout the Subject Index are given in English. The entries in the Subject Indexes are in the language of the original paper when that is one of the following five languages—Latin, English, French, German, or Italian. In the Authors' Catalogue each title is given in the original in one of these five languages, otherwise a translation into one of these five languages is added. This is a work which should find its way into all reference libraries, and into the various science departments of teaching universities and colleges all over the world, and specialists will be only too glad to have the volumes dealing with their particular subjects.

Practical Points in Gynæcology.—By H MAC NAUGHTON JONES 3rd Edition London Ballière, Tindall & Cox

OF a versatile mind Dr Macnaughton Jones, having turned from his first love, "*Diseases of the Ear and Naso-pharynx*," has produced a work on gynæcology which has already reached its third edition. This marked progress is in itself a sign of success of a kind. Small and handy as to size the book is pleasantly written, making interesting reading. There are many illustrations, most of them good, but a few (such as Figs 16 and 17) failing in the nature of things to convey much to inexperienced eyes. It is notably a book for the practitioner and senior student. The excuse for the work, in other words the preface to the first edition, is a wholesale quotation from *The Adventurer*, from which it is clear either that the author has been qualified for his task by Providence or that he is as one "by no means to be accounted useless," because he deals out acquired knowledge to his less fortunate brethren. Dr Macnaughton Jones has had the good fortune to visit many foreign clinics, from whose professors much fresh matter has been learned and incorporated in the third edition.

The seven chapters are all of a distinctly practical nature, but the subjects are more or less independent of one another. Indeed, each chapter forms a separate essay. Careful description is given of an aseptic operating theatre in the first of these, with illustrations showing a state of perfection which will stir up envy in the

mind of the surgeon in India who has no such advantages. Of the other chapters perhaps the most interesting is Chapter V which deals with a difficult and in many ways speculative subject. The question is stated in the usual way. Is the sexual disease the primary cause of insanity, or does it appear in such persons as are cursed with an unstable nervous system? Each case must be decided on its own merits, and the family history carefully investigated. The value of this same chapter is further enhanced by the addition of a Bibliography. The other chapters would have been improved by similar information.

The book is not one for the student to learn from or use as text-book, but no qualified man or senior student will regret having read it with care. It will bear reading more than once. The publishers, Messrs Baillière, Tindall and Cox, have done their part in the production well. The price, 4s 6d, is moderate for a book full of good illustrations, well printed and well bound.

EXTRACTS FROM FOREIGN JOURNALS

The Treatment of Accumulation of Wax in the Aural Meatus.—Goddard (*Thèse de Lyon* No 95 of 1899) believes that the "cork" of wax should never be extracted with a rigid instrument.

Such an instrument is apt to injure the wall of the meatus, and the wound thus caused may become infected by the micro organisms which are normally present in cerumen—not to speak of the danger of wounding the membrana tympani.

The treatment is the injection of warm boiled water or boric solution, the stream being directed *obliquely* against the wall of the meatus.

There is no necessity for a very gentle stream, so long as one diminishes the strength of the flow on the appearance of vertigo, or threatened syncope. If the patient be ordered to close his eyes, these accidents are not so liable to occur.

Should the accumulation be of long standing and hard, for one or two days before douching the ear, there should be instilled a small quantity of the following mixture—

R Soda Bicarb . gm 1 (gr 15)
Glycerini
Aque æl gm 20 (m 338)

After each instillation the mixture should be kept in the ear for 10 minutes or so.

When the plug of wax is extracted, the meatus is carefully dried with absorbent cotton wool, and then plugged for a couple of days with a little cotton wool to prevent the irritation caused by the sudden access of the external air.

As a rule the deafness and buzzing complained of disappear on the removal of the wax. Should such not be the case, there is present a lesion of the middle or internal ear or of the Eustachian tube, or it may be a simple sinking in of the membrana.

Digital Compression and Expression in Prostatic Disease.—In a series of communications on this subject Guérin recommends the expression of the stagnant secretions of the gland by compression exerted per rectum, and fixes the merit of having thoroughly investigated the subject on Riquet, before whose time one worked more or less in the dark. But he insists on this digital expression being only a *part* of the treatment, albeit a most important part.—*Lx Tribune Méd*, 13th December, 1899.

The Functions of the Nasal Fossæ—Violle (*Thèse de Paris*, No 40 of 1899) concludes from his experiments that the posterior nasal fossæ act as guards against infection in virtue of the leucocytes contained in the normal nasal mucus, these being derived from the chorion of the mucosa.

These leucocytes have the power, not only of absorbing bacteria (phagocytosis), but also of absorbing dust particles.

Neither the mucus itself (apart from the leucocytes) nor the vibratile cilia of the epithelium nasi have aught to do with this defence against germs and dust.

An Anæsthetic Mixture for use in the Surgery of the Ear and Nose.—Bonnain, of Brest, recommends the employment of the following mixture where anæsthesia alone is required—

R Phenol gluc } Partes æquales
Menthol }
Cocainæ Hydroch

where a caustic is also required—

R Phenol gluc Partes ii
Menthol
Cocainæ Hydroch 55 partem i

The mixture is anæsthetic, slightly caustic, and strongly antiseptic, and deserves to be tried—[*Gaz Hebd*, No 99]

The Biology of the Gonococcus—Scholtz, as the result of his experiments, finds that—

1 The best culture media are human serous fluids mixed with agar agar or bouillon.

2 On rabbits, white mice and guinea pigs the gonococcus acts not as an infectious but as a toxic agent. This toxic action is most evident when the culture is introduced into the peritoneal cavity.

In man the injection into the urethra of dead gonococci causes a passing inflammation.

3 Under certain conditions the gonococcus may pass into the subcutaneous connective tissue and produce a simple or phlegmonous suppuration there, and in certain cases it passes into the circulation, lymphatic or sanguine, and causes multiple inflammations—[*Arch f Derm in syph*, Bd 49, p 3]

The Operative Treatment of Epilepsy.—

From what he has seen of the cases operated on by Kocher at Berne, Schar concludes that extensive trephining, or even craniectomy, is indicated, where medical treatment has proved useless after being carried out for a long time.

The risks of the operation are but slight and are amply justifiable in view of the very serious infirmity present in such cases. As to the prophylaxis of epilepsy, Schar believes that proper treatment of head injuries is most important, and he urges that all who have suffered from cranio-cerebral trauma should rigidly abstain from alcohol—[*Arch f Klin Chir*, Bd 59, p 670]

Quinine Amblyopia and Amaurosis.—Zanotti at the last meeting of the French Ophthalmological Society, related the case of a man who took at one dose 12 gm (180 grains) of quinine. In addition to the ordinary symptoms of quinine he suffered from two spots of necrosis of the skin and intense itching of the whole body with desquamation, the skin becoming dry and rugose as in ichthyosis.

At first his visual acuity was somewhat increased, but rapidly decreased afterwards, a ne papillary atrophy being caused. The retina was spotted all over with points of degeneration, which Zanotti believes was due to constriction of the vessels and not to a direct action of the drug on the nerve endings of the retina.

In this case there was also achromatopsia in regard to green and violet, and hemeralopia, which latter persists.

Ulcers of the Cornea—These can, according to Bourgeois, of Rheims, be rapidly cured, with a very small leucoma thus—

1 The lacrimal sac is thoroughly curetted.

2 The conjunctival and corneal surfaces are irrigated with 1—2,000 mercury cyanide lotion.

3 The ulcer is sterilised by hot air, pumped on to it by means of a syringe similar to that used by dentists, after the evacuation of the hypopyon, should such procedure be indicated, and douching of the anterior chamber with artificial aqueous.*

4 The palpebral slit is dusted with an antiseptic powder, and the eye closed and a pad of absorbent wool tied on.

Tendinitis Rheumatica Ocularis—Under this rubric in the *Muenchener Medizinische Wochenschrift*, No 19 of 1901, A Pichler, first assistant in Czermak's Clinique at Prague, describes a rare but important symptom of rheumatic infection. The signs of the affection are pain, redness of the eye, and a swelling corresponding to the insertion of one of the eye muscles. This swelling is painful on pressure, and on movement of the eye. The case is one which has already suffered, or is at the time suffering, from an attack of joint rheumatism of the usual type. Pichler prefers to consider the affection as one of the tendons of the oculo motor muscles, and not as a form of episcleritis. The treatment of the affection should be carried out by means of a "sweat-cure" aided by the exhibition of the salicylates.

An Intestinal-Anastomosis Button of Magnesium.—As our readers are aware Murphy's button has the great disadvantage of not being absorbable. In the *British Medical Journal* of 11th May 1901, Moynihan publishes the account of a case which was operated on for complete rupture of the intestine at the duodeno-jejunal flexure, and which succumbed on the 104th day of the operation, owing to the duodenum having ulcerated under the pressure of the Murphy's button used, and become perforated. Any suggestion therefore which, while retaining the easy technique of the button anastomosis, tends to obviate such an untoward result, is to be welcomed. V Chlumsky has invented a button made of pure magnesium, without a spiral screw (the spiral screw being one of the weak points of the Murphy button), but with five instead of only three lateral joints. He states that if, after operation, the patient be given plenty weak salt solution to drink, this button will become entirely absorbed within ten days—[*Centralbl f Chir*, 15 of 1901]

The treatment of Gastric Ulcer—At the recent Congress of German physicians and physicists held at Hamburg, Fleiner of Heidelberg described what he had found to be the best method of using bismuth subnitrate in the treatment of gastric ulcer. The stomach is first washed out with any kind of mineral water, and half an hour thereafter 5 to 10 grammes, gr 75—150 of bismuth, well shaken up in water, are injected. The quantity of bismuth is gradually decreased, and, if necessary, some of the bismuth may be replaced by calcined magnesia. This treatment gives good results in ordinary cases of gastric ulcer, but has only temporary success where the ulcer is situated near the pylorus, and has brought about stenosis pylori. It may be. Where the ulcer has thickened hardened edges, and a diverticuliform pocketing of the mucosa of the stomach is present this treatment gives but little satisfaction. In such a case the sulphide of bismuth is formed, and thus the treatment may be used for diagnosis.

On Gallstones.—For the last 23 years Fiedler of Dresden has been known as an authority on the

* The artificial aqueous humour is thus prepared—1.15 gm (17.7 grains) Na Cl is dissolved in 98 gm (100 cc) of boiled distilled water. When used the solution is heated to 99° F. Collyria are condemned by Bourgeois—[*Gaz Hebd*, No 50.]

question of the causes and treatment of gallstones, wherefore it may be of service to give a précis of an article which appears from his pen in the *Muenchener Medizinische Wochenschrift*, No 43 of 1901. **Frequency**—Really about 1 in 30 males and 1 in 9 females have gallstones, but only some 5 per cent of gallstone bearers ever become aware of the fact. **Etiology**—Always there is a primary change in the mucosa of the gall bladder—this may be set up by the bacillus coli in many cases, and by the bacillus typhi in the rare cases. Without this inflammation of the mucosa, there can be no gallstone for the constituents of the bile do not of themselves become deposited, nor does diet have any effect as a cause of gallstones. **Symptomatology**—The onsets of pain are due sometimes to the engagement of the concretion at the neck of the gall bladder or in the duct, sometimes to an acute cholecystitis, and often to both these conditions occurring simultaneously. **Results**—Stones up to the size of a large pea may pass without ulceration, above this size there is always ulceration, and generally at the ampulla Vateri. This ulceration on healing causes further constriction. Sometimes the ulceration occurs higher up the duct, and causes inflammation of neighbouring organs, with abscess formation. **Treatment**—Morphia hypodermically, with linseed poultices for the colic. Indications for operations are these—Repeated colic attacks, with it may be jaundice, and no passage of a concretion with the faeces, the patient steadily losing flesh, and becoming weaker, and thus unable to follow his usual avocation—all this in spite of internal treatment.

Pannus and its treatment with the actual cautery—Hamburger of Lemberg, treats cases of corneal ulcer with pannus thus the Paquelin cautery, heated to a white heat, is passed close to, without coming in contact with, the diseased area, and then the vessels of the pannus are touched with the glowing point at the limbus.

The corneal ulcers improve rapidly under this hot air treatment and the pannus soon disappears—*Wiener Med Woch*, 42 of 1901.

From the *Spitalul*, a Roumanian contemporary, the two following extracts appear in the *Muenchener Medizinische Wochenschrift*, No 44 of 1901—

(a) **Cocainisation of the nasal mucosa for Neuralgia, &c**—Babes has found that the painting of the nasal mucosa with a 5 to 10 per cent solution of Cocain Hydrochl, on the affected side where the pain is unilateral, of both nostrils where the pain is bilateral, is of great service in the treatment of neuralgia, hemicrania, and headache generally.

(b) **Spontaneous extrusion of the Spleen.**—St Georgescu describes the case of a boy, *et* 9, who after several attacks of intermittent fever, was found to have a swelling at the umbilicus—this swelling became ulcerated, the splenic dulness extending right up into the swelling. A few days after his admission into hospital, a line of demarcation formed round the swelling, which later became completely detached, and was removed with the dressings. On examination the tumour was found to be the spleen, which had become necrosed as the result of arterial sclerosis.

The treatment of Gonorrhoea with Protargol Injections.—Jesonek has treated 387 cases thus the patient is as far as may be protected against irritation of the parts by rest in bed, and attention to the diet and the *primæ viæ*. In the beginning the injections are given frequently later when for ten consecutive days, numerous preparations of the secretion are found to contain no gonococci, and to consist mainly of epithelium and mucus, the injections are reduced to three daily.

When no reaction is observed after irritation of the urethra by the passage of a bulbous bougie, by the

ingestion of a glass of beer, and by a return to the ordinary diet, the case is considered to be "cured."

The injections are "prolonged," and consist at first of at 1—40 solution of protargol in water. For chronic cases the strength of the solution may be increased even up to 1—50, but care is required in the graduation of the dose, as irritation is very easily produced, and this will infallibly cause a prolongation of the treatment.

Jesonek lays great stress on the following points with regard to protargol the solution should never be warmed, as heating causes a splitting up of the silver compound, glycerine should not be used as a vehicle, being very irritating.

For an affection of the posterior urethra he passes a gum elastic bougie, lubricated with 1—10 protargol-oil of cacao butter, well up the urethra. The bougie is left *in situ* for 10—20 minutes, this treatment being repeated once every day, or every two days, for a week or so. *Muenchener Med Woch*, No 45 and 1901.

W D SUTHERLAND, M.B., 1 M.S.

Recovery without treatment from a Minie ball wound through the Stomach—A case of peculiar interest from a surgical standpoint has recently come to light through the death of a veteran of the civil war. The man, who was in one of the volunteer regiments on the Federal side, was shot through the abdomen by a Minie ball in the second battle of Bull's Run. He claimed to have lain for nine days on the battlefield without medical assistance, and afterwards to have been taken to a hospital in Washington, where he slowly recovered. He later re-entered the service.

In trying to obtain a pension on account of this wound which later incapacitated him for work, he met with great difficulty, because of the natural incredulity of the authorities in the accuracy of his story, which the incompleteness of the hospital records failed to substantiate. It was not believed that he could have recovered and been capable of serving again as he claimed, if his own account of his injury were correct, and it was only a short time before his death that he received what would seem to be an adequate pension for so severe a wound.

His death recently has furnished an opportunity to verify his statements by *post mortem* examination, with the result that his case proves to be one of the most remarkable from a surgical standpoint that occurred in the civil war. The autopsy was performed by Dr Arthur W Hopkins of West Swanzey, N H, and Dr A R Gleason of Keene, N H. It was shown that the bullet entered the epigastrium one and one half inches to the left of the median line, at the level of the lower border of the seventh rib. It penetrated both walls of the stomach and passed above the left kidney and pancreas apparently without injury to either. It emerged a little to the left of the spine, where it lay beneath the skin, and, as the man frequently testified, was removed at the hospital in Washington, to which he was taken from the battle field. The scars left by the bullet in its passage through the body were clearly defined at the autopsy, leaving no doubt in the minds of the physicians as to the course it had taken. The immediate cause of the man's death was pulmonary hemorrhage, and his lungs were found much diseased.

It is probable that when the bullet was removed in Washington the surgeons concluded that it had in some way passed around and not through the body, since abdominal wounds caused by Minie balls in the civil war were almost uniformly fatal. Recovery in this case is due, almost without doubt, to the fact that the patient's stomach was probably nearly empty at the time when the bullet entered the abdomen, and that for nine days, according to his story, he lay on the battlefield without food and only with water given him by the rebels, who moved him to a sheltered spot and left him, as they supposed, to die.—*The Boston Medical and Surgical Journal*, 19th March, 1903.

Correspondence.

SCARLET FEVER AT RAWAL PINDI

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The following brief note may be of interest with reference to an article in the *Indian Medical Gazette* of March of this year on "The Cosmopolitan Diseases in the Tropics," in which it is said that "Scarlet Fever on the other hand is scarce or quite unknown in the Tropics." In October 1902 when at Rawal Pindi, I was sent for by an English lady on account of her youngest boy (about four years old) having a painful swollen neck. On examination I found the deep cervical glands on both sides and especially the left, enlarged, painful and tender with the skin over them slightly oedematous and reddened. On looking at the throat the fauces were seen to be reddened, and both tonsils swollen especially the left which was somewhat excavated, and on which was a superficial slough, but no true membrane. The child's temperature was 102.5, but except for not sleeping well, had not seemed ill, and had made no complaint of its throat. The skin of the trunk appeared normal.

On enquiry I learned that about a week or so before, when staying up in the Gullies (Munee Hills), both this child and his brother (et. cire 6) had had a red rash all over their bodies which had been thought nothing of, owing to its only lasting about a day, and to the children not seeming ill, though the younger was thought to be rather "rundown" and was given tonics.

On then more closely examining the skin of both children, I found distinct evidence of "peeling" between the fingers and toes of each roughening of the skin of the arms, legs and thighs, and many dry scales of some size on the scalps. The elder boy's throat looked healthy.

I looked on both children as having had mild scarlet fever (the children, as often happens, having made no complaint of sore throat), and took the usual precautions.

I learned also that the mother had not had scarlet fever before. Her throat appeared healthy at that time. My suspicions were confirmed as follows:

Late in the evening of the third day (from my first visit) I was called in to see the mother. I found her in bed, with a flushed face, hot dry skin ("pungent"), furred tongue with prominent papillae and complaining of feeling sick. Her temperature was 104, pulse over 100. She said she had had sudden diarrhoea earlier in the evening but it had not recurred. In the artificial light I could not then make out anything definite in the skin or throat. At noon the following day her neck, chest and upper abdomen were covered with a distinct punctiform rash of quite a vivid scarlet colour, and entirely hyperemic. The cheeks were very flushed, the fauces were slightly reddened and swallowing was uncomfortable. The temperature was still high the pulse rapid, but there had been no vomiting, and the diarrhoea had not recurred. The tongue presented a well marked "strawberry" appearance.

The next day the rash had spread to the arms and legs, and there could be no possible doubt as to its nature. The case turned out to be quite a mild one, with no severe symptoms. There were no complications the throat symptoms were mild throughout, the rash began to fade after three days, the temperature was normal in less than a week desquamation took place, and convalescence was uneventful.

The children continued to "peel" for about ten days from the time I first saw them. None of the patients had albuminuria.

I think from the sudden onset, the typical rash, sore throat, and tongue condition, the previous history of the children and the course of the illness there can be no doubt about these being cases of scarlet fever.

H R NUTT,

DERI GHAZI KHAN }
24th March 1903 }M B (LOND), F R C S (ENG),
Lieut, I M S

Editor's Note—A résumé of cases of scarlatina in India published between 1871 and 1899 occurs in the August 1899 issue of the *Indian Medical Gazette* at page 277. A similar reference appeared in the *Journal of Tropical Medicine*, August 1899. Captain R. H. Maddox, I M S, reported a good case in the *Indian Medical Gazette* for December 1902 at page 370.

HERNIA OF THE BLADDER

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—*Apropos* of the 'Case of Hernia of the Bladder associated with inguinal hernia of the same side' reported by Dr. Wanless in your February number, it may be of interest and practical importance to recall two cases occurring in a London General Hospital which I saw operated on and afterwards had an opportunity of examining in the *post mortem* room.

The first was a man with an old reducible inguinal hernia of the left side who, as he chanced to be in the out-patients' department one day, developed symptoms of strangulation, he was immediately taken to the theatre and anaesthetised, reduction by taxis being unavailable an operation for radical cure was proceeded with, all appeared usual until the supposed sac was opened when a large gush of what proved to be urine occurred then it became apparent that the hernia consisted of a pocket of a full bladder forced through the patulous internal inguinal ring and setting up symptoms of strangulated hernia, the incised bladder wall was efficiently closed and returned into the abdominal cavity, but the man died of peritonitis some seven days later. *No catheter had been passed prior to operating.*

The second case was a woman with a small reducible femoral hernia of the right side, who was admitted into hospital for radical cure at the operation the empty sac was found ligatured at the base, and excised, all being apparently normal.

All went well until three or four days after the operation, when she developed peritonitis and died after ten days.

Post mortem shewed an interesting condition of things—the ligatured stump of the sac contained in its ligature a portion of the thickness of the bladder wall and the nipping of this had caused ulceration and perforation, hence the fatal issue.

In the light of the possibility of the bladder wall taking part in a hernia, it should be an infallible rule to always, prior to operation, pass a catheter and thus draw away the bladder from the internal ring and obviate any chance of enclosing it in the ligature applied to the stump of the sac.

Yours, etc,

F W SUMNER, B A, M B,
B O (Cantab) M R C S,
Lieut, I M SMIAN MIR
22nd February 1903

ÆTIOLOGY OF LEPROSY

To the Editor of "THE INDIAN MEDICAL GAZETTE."

Mr Powell writes in reference to Mr Hutchinson's reply at the recent meeting of the Bombay Medical and Physical Society—

I must with regret decline the honor of having invented the family of "Infective Granulomata" which Mr Hutchinson has thrust upon me. It is a recognised pathological group.

He can "see no analogy whatever between them" "Let syphilis, leprosy and tuberculosis each for itself at present stand alone."

"At present" is instructive, and shews the rapidity of Mr Hutchinson's conversion as an hour previously he supported his fish theory by arguing the analogy of leprosy and tubercle, and even claimed that leprosy was only a form of tubercle.

Mr Hutchinson says nine tenths of the Kaffir lepers will tell you they had never seen leprosy before it showed on their own persons. They will make the same statement about syphilis. I am not inclined to place a high value on the diagnostic ability of any savage.

My statement about milk was that if any crank chose to preach that leprosy was due to the drinking of milk, it would be difficult to disprove his fad, Mr Hutchinson has essayed to do so.

No doubt the fauna of New Zealand presents many anomalies, but I was hitherto under the impression that Maoris were mammals.

Mr Hutchinson abhors the word "contagion" in connection with leprosy, but rejoices in the term "commensal communication," which in a pamphlet distributed by him at the Bombay Meeting (A Lecture delivered by Mr Hutchinson to the Standing Committee on Leprosy, London, 28th November 1902) he thus defines "It is that the only way in which the living bacillus can be received into the system is by the stomach, and that practically such communication takes place only when food is eaten which has been contaminated by discharges from a leper's hands. This suggestion fully accounts for the failure of all attempts to convey the disease by inoculation of the skin."

I have no regard for finicking definitions of the word "contagion" Gonorrhœa cannot be conveyed by inoculation of the skin but by applying its germ or discharge to the mucosa, generally that of the genito urinary tract or the conjunctiva. Mr Hutchinson believes leprosy can be caused by infecting the gastric mucosa "by discharges from a leper's hands" If he will not call lepra "contagious, what does he call gonorrhœa?"

As I have before said "commensal communication" simply means infection by the alimentary mucosa, and I claim Mr Hutchinson as a fellow "contagionist"

The logical outcome of both our views is that to prevent "contagion" or "commensal communication" segregation is the most reasonable means

THE BOMBAY MEDICAL AND PHYSICAL SOCIETY

AN Ordinary Meeting of the Bombay Medical and Physical Society was held in the Petit Laboratory, Grant Medical College, on Friday, March 20th, 1903

Lieutenant Colonel H P Dimmock, M D, I M S, Vice-President (in the Chair) Over three hundred members and Visitors

Discussion on the "Ætiology of Leprosy," introduced by Mr Jonathan Hutchinson, F.R.S

Mr Hutchinson said he could not commence his remarks, which were to be taken as an introduction to a discussion, without first thanking very heartily the Bombay Medical and Physical Society for its courtesy in convening the Meeting. He might then briefly advert to the fact, well known to most of those present, that twelve years ago in connection with a fund got up in London, known as the Prince of Wales Leprosy Fund, a Commission was sent out to India from England to enquire into the prevalence of leprosy and to endeavour to ascertain its causes. He (Mr Hutchinson) was a member of the Committee in England, and though he was not a member of the Commission that came to India, he followed their proceedings with great interest. The Commission presented a report, which, though an able document, did not prove very valuable, as the conclusions at which the Commissioners arrived were all of a negative character. They did their best and collected a mass of evidence, but could not come to any definite conclusion. They were obliged to say that they could see no clue at all to the cause of leprosy. They reported they found no evidence that the disease was contagious. After a careful investigation they said there was no reason whatever to believe that in India leprosy was spread by contagion from one individual to another. They also examined the question of its hereditary transmission. For this purpose they visited schools, which had been opened for the care of the children of lepers. These children were kept under observation for a very long time with a view to ascertain whether they showed inheritance of the disease, and the conclusion at which the Commission arrived was that there was no reason to believe that leprosy was a hereditary disease. In short, they arrived at two negative conclusions, namely, that leprosy did not spread in India by contagion and that it was not perpetuated by inheritance. That was the basis on which we should found our further enquiries.

He was there as a representative and advocate of a theory, which many people might perhaps call one of his crotchets. He was there to explain and to say that he believed that the true explanation of the cause of leprosy would be found in connection primarily with a fish diet. He would show how far that general statement must be circumscribed. This was an opinion which he had entertained for the last fifty years and with that opinion the Commission was well acquainted. The members of the Commission met him at his house before they came out to India, and they were prepared to examine in India the correctness of his hypothesis, whether the eating of fish conduced to the spread of leprosy. The fish hypothesis was rejected by the Commission, because they found that leprosy prevailed in very many parts of the country where fish eating was not prevalent. For instance, they recorded that there was no fish market at Darjeeling at the foot of the Himalayas, and there was no fish-eating there, yet lepers were found there. Again, in some of the leper asylums in India, they were told by a considerable number of lepers that they had never in their lives eaten fish.

The Commission reported about twelve years ago, and since then nothing material had been done as regarded leprosy. Now, they had founded a Polyclinic in London some six years ago, which undertook investigations with regard to various diseases. They had their Leprosy Committee, which met two or three times a year and invited experts coming from the East and elsewhere to give their views on the subject. These meetings were most interesting, and as a result he was confirmed in his conviction that the fish-diet was the cause of leprosy. He might say that the idea was not an original one, but it had existed in almost all ages and in all countries. In

England there were old records which showed that the excessive eating of fish was regarded as producing leprosy. This opinion was not only a medical, but also a popular one. It had been thrown aside as a not well grounded hypothesis on very insufficient evidence.

In connection with the Committee of the Polyclinic he went to South Africa in the winter of last year. His reason for doing so was a statement published in a Report of the South African Government to the effect, that near Cape Town, there lived on the hills among the Kafirs and Zulus a number of lepers, though no fish was obtainable there as food. It was also alleged that these Kafirs and Zulus were a very cleanly race, that they lived in pure air, and that they had every advantage of good food and other comforts, and yet there were lepers among them. He went to these places to prosecute his enquiry and to ascertain how far the statement was correct. As a result of his investigations, he found that in places where lepers were met with, leprosy was exceedingly infrequent. In South Africa leprosy was a new disease.

There was no leprosy at the Cape till the Dutch farmers brought large numbers of Hottentots to work on their farms. The Hottentots never ate fish and never had leprosy before, but the Dutch were obliged to feed them on large quantities of dried fish. Such large quantities were needed that the Dutch imported Malay fishermen to catch and cure the fish.

It commenced in some place close to Cape Town. It so happened that these new-comers brought with them rice and salted fish, which was then ordinary food, and as the native Hottentots, who never ate fish and never had leprosy, came in contact with them, they also cultivated a taste for the new kind of food. The result was that a salt-fish trade sprang up and spread to various other sea side places to the east of the country. Fish was caught near Cape Town and factories were established for curing fish. The disease first broke out in that place, and as these fishermen travelled inland for the purposes of their trade the disease gradually made its appearance in the Transvaal, Orange Free State, Zululand and other places. In the Republics there was only a sprinkling of leprosy.

The Zulus also never had leprosy and never ate fish till they came to work in the mines of Natal and the Transvaal. There they were fed on salted fish. The Government had passed laws compelling the mine-owners to supply their labourers with a certain ration of dried fish. Leprosy was first introduced into Zululand by these Zulus on their return from the mines.

The speaker then proceeded to argue that leprosy was not spread in South Africa by contagion. As he had said, the Commission reported that there was no evidence that leprosy was contagious. There were two other Commissions appointed by the Royal College of Physicians of London and sent out to India to enquire into the question. They both reported that the disease was not contagious and that the evidence against contagion was overwhelming. It was a conclusive thing that leprosy was rarely caused by contagion. He denied that it was contagious in the sense that it was communicable either by breath or touch. He believed it was communicable in a special way. He was of opinion that the only way in which the living bacillus could be received into the system was by the stomach, and such communication took place when food was eaten which had been contaminated by discharges from a leper's hands. His suspicion was that in leprosy they had only a form of tuberculosis. Tuberculosis was caused by eating meat and drinking milk containing the tubercle bacillus. He knew of a case in Madras in which two healthy children were nursed by their mother in a leper asylum, and they subsequently developed leprosy. His suspicion was that they had derived the bacillus from the mother's milk. This was one way in which leprosy was communicated to children. There was another. It was known that in this country lepers sold sweetmeats and fruits, and it could be conceived that children might be tempted to buy such articles, contaminated as they might be with the discharges of the sellers. This food theory did not apply to grown up people, who, they could well imagine would not eat food taken directly from the hands of one who had sores on them. At any rate, this was a way in which they could account for the occurrence of leprosy in a certain number of lepers in India.

But although he fully admitted, that leprosy was communicable by food, he was prepared to deny that the disease could maintain itself in any non fish-eating community. It died out very soon indeed. He cited two instances as evidence in support of the argument. One of them occurred in the West Indies and the other in the South Sea Islands. In both cases a number of families having lepers among them were compulsorily isolated, and the result was that the cause of the disease being non-existent it died out altogether in both places in course of time. But still stronger evidence upon the point, the speaker continued, was given by the migration of lepers into Europe at the present day. In London there were at least one hundred lepers, who had

gone there from India, East Indies, West Indies, South Africa, and other places. Now in London they took no precautions against lepers. They were free to move about wherever they liked. They freely mixed themselves with healthy people, and they were even admitted into ordinary hospitals. The people of England never had any reason to regret the absence of precaution. Leprosy has not spread in London. Similar testimony was furnished by the city of Paris, which had also about a hundred lepers.

Mr Hutchinson next took up the question of transmission of leprosy by heredity. He said about half a century ago a very large number of Norwegian lepers emigrated to the United States with their families. Becoming curious to ascertain how they had fared, the Norwegian Government, after thirty or forty years, sent over medical men to ascertain whether these lepers had spread the disease there. Altogether seventy-two lepers had emigrated, and of these thirty-two were found to be dead. With one exception, no new case had originated through those lepers. The one who developed leprosy was a Norwegian born emigrant. Probably he carried the virus, which took some time to develop, in his own person from his native land. So he thought they were quite justified in asserting that unless the external conditions were favourable, leprosy would die out of itself. He maintained that the only favourable condition was communicability of the disease by food, the mere transference by inheritance or by touch was quite out of the question.

Let them next ask what were those parts of the world in which leprosy still existed. It had vanished from Europe, where it must have widely existed, because there were leper houses all over that Continent in former days. In the Middle Ages, lepers never were compulsorily confined. The leper houses of those days were not places of segregation, but resorts or retreats, into which it was a privilege to get admission. If a leper misconducted himself he was turned out. In the Middle Ages leprosy was prevalent in several countries of Europe, but as the nations advanced in civilization and wealth, and improved their diet, the disease died out of itself.

The reformation, too, played an important part in checking the spread of the disease. He believed the spread of the disease in the middle ages was due to the influence of the Roman Catholic religion, which enjoined upon its votaries the observance of fish fasts in Lent. It was remarkable that while the disease prevailed in Germany and other neighbouring countries, it never went into the inland of Russia, as the Greek Church forbade the use of fish as well as flesh on fast days. It might be a coincidence, but it was a remarkable coincidence. Leprosy still persisted in Norway and Iceland with extreme pertinacity. Norway was two hundred years behind the rest of Europe in civilization. About a century ago the people of Norway lived almost entirely on fish. In Iceland dried fish was the staple article of food. With equal pertinacity leprosy persisted in Nova Scotia for the last 120 years. There it was almost restricted to a little colony of fishermen who were very poor and lived on the sea coast. The same state of things was to be observed at various places in the Mediterranean, and on the shores of the Black Sea, the Caspian and the Baltic. In Burma and China leprosy prevailed from time immemorial. People there lived on fish. A glance at his "leprosy globe" would show that over the whole world the regional prevalence of leprosy was chiefly on the sea coast, on islands, or in river valleys. He had always found that the ratio was still fairly established between the fish eating habits of the community and the amount of leprosy among them. He was glad to be able to say that in the Bombay Presidency leprosy was diminishing. The last census returns showed that the diminution was 50 per cent. He was sorry to say that this improvement was gained by suffering. It was famine that had reduced the spread of leprosy. When famine or scarcity occurred, it was first felt by lepers. But ten years hence, on the return of good times, they would again find a great increase in the number of lepers in the Presidency. He also drew the attention of the Meeting to the fact that the number of lepers among the Jains and the Brahmans was exceedingly small. These people were vegetarians, and did not eat fish.

In concluding his remarks, Mr Hutchinson said this was the last lecture he would deliver in India. The results of his tour in India had satisfied him that the fish theory was now better understood in India than before. In meetings such as this, he had been subjected to a variety of criticism but he might say that he had heard nothing which in the least shook his belief.

Mr Arthur Powell said pathology teaches us that leprosy belongs to a well-defined group of diseases known as the infective granulomata. The other diseases which make up this group are tuberculosis, actinomycosis, glanders, syphilis, yaws, rhinoscleroma, aspergillosis, blastomycosis, and coccidioides. Every one of these diseases, except rhinoscleroma, which is a very rare and little studied disease, has been definitely and experimentally proved to be an inoculable,

that is to say a contagious, disease. One is also struck with the fact that, like leprosy, every one, with the exception of syphilis and yaws, has a definite living germ as its recognised cause. All these bacilli, except that of rhinoscleroma, have been grown outside the body, and the disease has been inoculated experimentally by injection of the pure bacilli. In the case of the condemned convict Keanu, who was experimentally inoculated with leprosy tissue, leprosy undoubtedly developed subsequently. Pathological analogy therefore supports the popular belief of all races and all ages, that leprosy is no exception to the laws of its own group of diseases, but is an inoculable and contagious disease.

The period of incubation in leprosy is, however, of such extraordinary length that all trace of the site at which it was inoculated or where the contagium entered is forgotten before the first signs of the disease arise. Mr Hutchinson admits the bacillus of Hansen is the direct cause of leprosy, but he wishes us to believe that practically the only way that bacillus is taken into man's system is by the consumption of badly cured fish. The first fact that should be proved is that the bacillus grows and multiplies, or at least survives on such fish. Numerous attempts have been made to grow the lepra bacillus on media prepared from fish in many ways. All with the same negative result. True, one Van Houtum says he succeeded, but as the bacilli he obtained in no way whatever resembled the lepra bacillus, either in shape or staining reaction, his assertion is ridiculous and credited by no bacteriologist. As far as Mr Powell was aware, no acid fast bacillus, or one in any way resembling that of leprosy, had ever been found growing on fish. He no more believed that lepra bacilli arose *de novo* than that spermatozoa or babies did.

One fact Mr Hutchinson alludes to in his address is that leprosy began to leave England at the time of the Reformation. This he attributes to the abolition of Lent fasts. The followers of the older religion throughout Lent and on all Fridays were forbidden to eat any flesh except fish, so large quantities of fish were cured and stored up for the use of the people. Well, leprosy disappeared about the same time from Ireland, where there was no Reformation and the Lent and Friday fasts have continued to the present day. Mr Powell had lived in the south of Ireland and could well remember the huge quantities of herrings and dried ling, which was bought by the hundredweight, and stored for the use of the servants. They were fond of eating the outer peeling part of the ling, raw. Leprosy has, however, wholly disappeared from Ireland as an indigenous disease, though in these days of travel an exotic case is now and then imported.

Such was a celebrated case under the care of Dr Benson at Armagh. At that time there were no other lepers known in a population of some five millions. This leper was a soldier who had served in India, and there contracted the disease. Dr Benson showed him to the Royal Academy of Medicine. Some years later, when this man had died, Dr Benson found that his brother, who had lived with him, worn the same clothes and slept in the same bed with him, had become a leper. This case was not illogically looked upon as evidence of the contagious nature of leprosy.

What had Mr Hutchinson to say about this case? In the "Archives of Surgery" some years ago Mr Hutchinson said he rather looked on it as a proof of his fish theory!

Mr Powell blushed to say this benighted city had not a copy of those "Archives," but if Mr Hutchinson would allow him and be good enough to correct him if he were wrong, he would give his recollection of the paper which was in the form of a dialogue between "Ille" and "Ego." Mr Hutchinson's points were that—

- (1) the Irish were a Roman Catholic nation,
- (2) they were poor, therefore,
- (3) they did not get as much fish to eat as they would like.

Now, this soldier leper had been abroad in India and there learned to live luxuriously on fish among other things.

He, on his return home, taught these habits to his poor benighted brother. He beguiled him and he did eat—fish.

Hence the leprosy.

Mr Powell had shown these remarks to Dr Benson's brother, who laughed heartily. He said the luxury was evident when the two men not only shared the same bed, but the same trousers. As to the man's religion, as well as he could recollect, he was a Protestant.

Another piece of evidence Mr Hutchinson had given us, and it was new to Mr Powell, is that the Hottentots and Kafirs never ate fish and never suffered from leprosy till the Dutch settlers came and fed these Kafirs on dried fish to such an extent that they had to import Malayan fishermen to obtain their supplies. Surely the introduction of leprosy was more likely due to contact with these Malayan fishermen, among whom the disease is prevalent, than to a *de novo* growth of bacilli from eating fish?

Again, Mr Hutchinson tells us the Zulus never ate fish, and never had leprosy till they went to the mines in Natal and the Transvaal. There they were served with rations of fish

and on their return to their country developed and spread leprosy. This, in Mr Powell's opinion, was also an instance proving the necessity of contact with lepers. He had seen many thousands of Indian coolies in those mines, and leprosy was not rare among them. Zulus and coolies mixed freely with one another and carried on a good deal of mutual trade and barter. The Zulus, according to Mr Hutchinson, spread leprosy in their own country on their return from the mines, but if they introduced fish eating habits it was certainly to a very slight extent.

Fish was eaten by the people of the Sandwich Islands from time immemorial. Leprosy was unknown till within the last half century and did not appear till Chinese lepers came there. There are now nearly two thousand lepers in these islands. The appearance of leprosy was not accompanied by any change in or increase of, then fish eating customs. The same state of affairs existed in New Caledonia. At the time of the speaker's birth there was not a single case of leprosy known in New Caledonia. The people had always eaten fish. A Chinese leper came there. He introduced no variation in the fish-eating habits, but leprosy quickly spread, till at the present day there are at least four thousand lepers in New Caledonia.

Mr Hutchinson points out that leprosy is most prevalent on sea coasts and in river valleys, so are tubercle, cancer and malaria, but we do not associate them with the eating of fish. The fact is, coasts and valleys are the moister and more fertile regions of the earth, and therefore the population is denser, and infective diseases have better chances of spreading. Another point is that till the last generation or two, the sea and rivers formed the only great highways for traffic and intercommunication. Along these lines of traffic disease is likely to be carried and spread.

There is a race in India, the Manipuris, who eat no flesh of any kind except fish, of which they eat such large quantities, preferably in the sun dried condition, as to earn for themselves among their neighbours, the nick name of "Sukti mass wallah," dried fish eaters. No European surgeon has had a larger practice than Mr Powell among these people, and he is certain leprosy is much rarer among them than among the Bengalis, coolies and hill tribes among whom they live, in whose bazaars they are always to be found selling their dried fish. Leprosy is fairly common among the orthodox Jains and Brahmans, who never eat fish. Mr Hutchinson has found a few unorthodox Brahmans, who have not denied the eating of fish, just as he must have met Jews who have eaten bacon. He is therefore sceptical about the whole caste not eating fish. He practically asks us to "tell that to the Marines," these people have fish all around them; they see others eating and enjoying fish, of course they cannot resist the temptation, they too eat fish.

They see Christians, Mohammedans, Domes and Chamars eating beef, yet no one who knows the orthodox Brahmin suggests he eats beef. To him fish and beef are not an article of temptation but of loathing. In France our neighbours eat snails and frogs. Will Mr Hutchinson say that the English girls who see them do so, do not follow the French example when they have slugs, snails and frogs all round them to be had for the catching? In addition to a "social" repugnance as great as that of the English girl for snails or frogs the Brahmin has a deep religious principle in his loathing of fish and beef. His regard for religious principle is fully as great as that of the Moslem Dervish or Christian martyr. Mr Powell has known, and he was sure many of his audience also knew, of instances where Brahmin patients died in hospital of sheer starvation rather than touch a drop of drink or morsel of food from the hands of others.

The speaker was of opinion that Mr Hutchinson had wholly failed to prove his accusation. The onus of proving fish innocent did not lie on those who traversed Mr Hutchinson's views. Any other article of diet of widespread use might with equal facility be accused, and with equal difficulty defended. Suppose Dr Jones says leprosy is due to the drinking of milk. Can you produce a single leper who has never drunk milk? If you bring a leper who says he has never touched milk, Dr Jones will retort rudely he is not speaking the truth, or politely will say he must have taken milk unwittingly. If he says he never even drank mother's milk, Dr Jones will say his memory does not take him back so far. He must have drunk milk. He has leprosy. *Post hoc, propter hoc*.

Professor Brown may have a theory that starch is the cause of leprosy. Mr Smith may hold that the ingestion of sugar causes leprosy. You will find it equally impossible to disprove their theories, as all lepers have eaten starch and sugar.

If Mr Hutchinson does not contend that the lepra bacillus is a facultative saprophyte on fish, that fish does not grow the bacillus or develop what is apparently another bacillus into a condition of virulence, but simply acts as a carrier of bacilli from the sore of a leper to the mouth of a healthy man, what evidence is there, or what ground for suspicion,

that any other article of food or utensil such as a cup or a spoon, would not be quite as good a medium?

Commensal infection is contagion—contagion by the alimentary mucous membrane.

Mr Hutchinson has made the strange statement that he considers leprosy only a form of tuberculosis. He allows tuberculosis to be an infective and inoculable disease, but invents a miraculous *de novo* method for the transmission of leprosy.

The speaker had great diffidence in offering these remarks but he was loath that any theory however plausible should blind the people of this country to three known facts:

- (1) Leprosy was believed by all competent authorities to be due to a specific bacillus.
- (2) That bacillus has never been found anywhere except on the person or in the discharges of a leper.
- (3) No authentic case of leprosy has ever been known to arise where contact with a leper or his discharges was not possible.

The reasonable deduction was that by the isolation or destruction of all lepra bacilli, latent or patent, we shall prevent the spread of these bacilli and the disease to which they give rise.

In reply to what Dr Powell had said Mr Hutchinson expressed regret that without in the least attempting to controvert the strong facts in disproof of all modes of communication, except commensal, Dr Powell had assumed that the disease is contagious. He had done so on purely theoretical grounds. He had constructed a family of "Infective Granulomata" had placed leprosy in it and thence argued that it must therefore be infectious. This was, he thought, reasoning in a very vicious circle. Syphilis had been put into the same, but he would be a bold man who would venture to assert any real parallel between the two. Syphilis had a primary sore, leprosy none. Syphilis spread by contact with ease and almost certainty, leprosy scarcely ever. Syphilis was easily inoculated, whilst experiments with leprosy always failed. He, Mr Hutchinson, could see no analogy whatever between them, and he much regretted the attempt to construct an arbitrary and non natural classification of disease which could do nothing but embarrass the clinical observer. Let syphilis, leprosy, and tuberculosis each for itself at present stand alone.

Dr Powell was a contagionist, let him first controvert the facts which seem to show that leprosy is not contagious before he seeks to apply that assumption. The conditions in South Africa were as strong as possible against contagion and in favour of *de novo*, that is dietetic origin. The Malays in question had stayed at their fisheries, but the leprosy cases occurred inland amongst the farm labourers who had eaten their fish. Nine out of ten of the South African lepers would assure him that they had never seen a leper or perhaps never even heard of the disease until it shewed itself on their own persons. Their statements were supported by the fact that it would have been very difficult for them to expose themselves to the risk of contagion had they wished to do so. Dr Powell's suggestion that other articles of food were as much open to suspicion as fish was made, he could not but think, without much consideration of the facts. Let Dr Powell name any. His mention of milk was unfortunate. The New Zealand natives at the date of the European discovery had much leprosy. They lived on fern roots and fish but they had no mammals in the islands excepting a small rat.

A CONTRIBUTION TO THE DISCUSSION ON THE ÆTIOLOGY OF LEPROA

By E F GORDON TUCKER,
CAPT, I M S

As one who is accustomed to regard with profound respect the views which Mr Hutchinson holds on any of the many subjects which he has made particularly his own, I should like to offer a few remarks in support of his views regarding the dissemination of leprosy by means of a fish diet, and to attempt to harmonise them with what we actually know about the ætiology of leprosy.

Leprosy is always associated with the presence of a micro organism which has definite characters and which gives rise to specific lesions in the human subject and, as far as we know, in the human subject alone. It is not a common disease, even in areas in which it is endemic. This comparative rarity is due mainly to two facts, (1) that lepers, especially male lepers, rapidly become sterile, (2) that while it is a disease which can be communicated from one leper to a healthy person living in proximity to him, but not necessarily in close or intimate contact, yet its power of communicability is extremely low, and, for reasons which are quite unknown, can only be communicated to a few.

In examining the possibility of the contagiousness of leprosy, to be absolutely safe, we must eliminate all cases which appear to have contracted the disease from lepers while living in districts in which the disease is endemic. What we want is an instance in which the original leper comes to a country which is leprosy free, and communicates the disease to a person living in contact with, or proximity to him, which person has never been out of the leprosy free area. Such a case is that which was recorded by Dr. Benson of Dublin, to which Dr. Powell has already referred, and a good account of which is to be found in the article on Leprosy by Dr. Abraham in Clifford Allbutt's *System of Medicine*. The man who "caught" the leprosy from his brother was accepted as an instance of the disease by the Academy of Medicine in Ireland, and we must accept this evidence. There is a somewhat similar instance known as Liveing's Guernsey Case, which is mentioned in that author's *Handbook on the Diagnosis of Skin Diseases* 1882, p. 289. At the same time such instances are extremely rare. We should expect more examples to crop up in London and Paris in each of which, it is estimated, there are about a hundred lepers. But such an instance has never been recorded. Instances of contagion between husband and wife are distinctly exceptional. For instance Hirsch quotes one district in Norway in which there were 148 leprosy families; in 132, only one patient was affected; both parents were affected in the remaining 16. I think we may conclude, therefore, that while leprosy is conveyed in a few instances by contagion, yet it is certainly not the usual means by which it is kept going in endemic areas.

From the study of recorded cases and from our own observation, we see one, two, or perhaps three members of a large family, or perhaps two or three persons in a village, picked out in some mysterious way to become victims of this disease, while others who appear equally exposed to infection escape. We must, therefore, invoke the existence of a special predisposition on the part of the individual to explain this well known fact. We reject the possibility of the hereditary transmission of leprosy just as we reject a similar transmission in tuberculosis. But what is transmitted in the latter disease is a special tendency to favour the development of the tubercle bacillus when exposure takes place. This tendency (the scrofulous diathesis) is a very common one. And in the same way there appears to be a similar or analogous tendency, running in families, to favour the development of leprosy when the subjects reside in endemic areas. This tendency however, is certainly not marked by the distinctive types of feature and complexion which characterise scrofula, and, unlike scrofula, is decidedly an uncommon tendency.

Further, there certainly is a considerable natural resistance to the growth of the bacillus in the human body. The disease has an enormously long incubation period, and it requires a still longer period for it to become generalised. Several unsuccessful attempts have been made to inoculate human beings with leprosy material. How such experiments can be justified it is difficult to conceive. However, two such experiments were made by Bacciggi, experiments which Hirsch rightly characterises as "felonious" experiments. He says "In order to fix my opinion (on the non contagiousness of leprosy) I undertook to inoculate the pus from a leprosy ulcer on some infants of six to eight years of age. I could only twice obtain permission to perform this operation. However these two operations having been made, my conviction was established." Some cases of successful (mostly accidental) inoculations have been reported, but none are conclusive, either (1) because the incubation period was too short, or (2) inoculation took place in an endemic area, or other members of the leper's family subsequently developed the disease years after the removal of the original leper from the family.

In connection with this matter the following interesting account is of value. It is given by Zambaco Pacha, and relates to the monks of Mount Athos. "Fifty years ago the monks first elected a refuge for the accommodation of lepers, who, having been driven from their villages in the Peloponnese, took refuge in the forests with which the mountain is clothed, and perforce lived there the lives of wild beasts. Among the monks were many who thought it would be a sign of special grace if they were stricken with leprosy, and who made every effort to contract the disease they associated with the lepers in their lodging, shared their food, and even wore their flannels and underclothing while still saturated with discharges from their leprosy sores. But although these attempts had for years been systematically made, not a single monk had ever suffered in the least, and that although their food and filthiness of body were such in every respect as are commonly thought favourable to the development of this disease." And M. Zambaco concluded by remarking that "A single instance of transmission observed in this isolated locality, where every case of contagion could be followed up with rigour and precision, and where leprosy is not at all endemic, would certainly have been of the very

highest importance. But such an instance was never demonstrated."

In a "History of Leprosy in Australia" by Dr. Ashburton Thompson, New Sydenham Society's Transactions, Vol. CLXII, p. 84, is given a careful account of groups of cases in which one particular person was suspected of having given rise to other cases in the same village or district. Out of seventeen cases in which the particulars are sufficiently known, there was extension of the disease to persons known to have been in household contact with the sick in three. In three other groups there occurred one or more cases in the same district as or in the country more immediately surrounding the residence of, the first known case.

In the first of these three groups, the first known case (Case A) was attacked in 1862, and may perhaps have lived until 1872-75, he belonged to the village of Campbelltown, where his father was established as a publican, but whether he lived there during the whole of his illness is unknown. Case B was that of a little boy who lived at the same village, and who was attacked in 1871-72; his parents were well-to-do people of some little property. Case C lived as a domestic servant in the household of Dr. Thompson's informant at Camden, a village six miles from Campbelltown, she left service to get married in 1872, was attacked in 1873, and resided in her own cottage half a mile out of Camden until the end of 1878 when she died. The actual relation in which these three stood to each other (if any) is unknown, but every probability points to their having been no more than casual acquaintances at the most. In another group, Case A had with Case B only a nodding acquaintance—a statement consistently adhered to by both men during their detention and without doubt strictly correct; moreover, the second patient was employed at a station fourteen miles away, and but seldom went into the town where Case A lived.

In the third group Case A lived in the same small cottage with his wife, child, father, mother, aunt and one brother (who specially attended to him) during all the years of his illness and he escaped. Case B in this locality was a man who was no relative, and who very rarely visited the hut, according to accounts which leave no room for doubt.

From this Dr. Thompson deduces the very reasonable opinion "that in New South Wales close contact with tuberculous lepers is a matter of very slight moment, and that little or no contact at all does not avoid danger."

If in a given area practically isolated from the rest of the world, A develops leprosy and is followed by B and C, who have had "only a nodding acquaintance" with A and with one another, and who live moreover, at distinctly separated points in the district, what is the possible vehicle by which the virus may have been carried to B and C from the original A? I wish to put forward the suggestion that this vehicle may possibly be flies, or, more probably, from what we have learnt about malaria, some particular species of fly. If there is one disease in the human subject in which it is likely that the virus in an active state can be carried into the outside world by means of flies that disease is leprosy. The parts are completely anæsthetic, there are large foul ulcers, exuding fluid, on parts which are generally exposed, flies therefore can settle and remain undisturbed for long periods on these anæsthetic ulcers, and, if the flies are of small size, are not likely to attract the patient's attention. Further, the ulcers exhale a peculiar goat-like odour which is extremely likely to attract flies from a distance. The possibility of the conveyance of the leprosy bacillus to a comparatively short distance by flies can be at once seen to have a probably very important bearing on the suggestion that leprosy is caused by contaminated food and more especially on Mr. Hutchinson's "fish theory." A dead fish giving out an "odouriferous stench" is the most likely thing in the world to attract swarms of flies from a distance, and most especially will this be the case where fish is being dried in large quantities in the sun.

When in Pondicherry in 1895, I made a careful examination of all the lepers I could find in the Leprosy Asylum and in the native town. I was much struck by the frequent presence of a small black fly on leprosy ulcers, and have counted as many as twenty on a leprosy foot. On entering the fish market one was greeted, not only by a most pronounced smell, but also by a loud buzzing, rising throughout the whole market from the millions of flies which were hovering over the fish stalls.

If it be objected to this suggestion that the leprosy bacillus is not found in the discharges from leprosy sores, I can only quote from Patrick Manson—"a good enough authority—who says of the leprosy bacillus—"It is abundant in the purulent discharges from ulcerating lepromata or other forms of primary leprosy infiltration."

A possible conveyance of the bacillus of leprosy by a fly or flies has, as far as I know, not been systematically worked at

in recent years. An investigation on modern lines might be rewarded by valuable results.

Mr Hutchinson's tour in India, while it has stimulated enquiry, has not obtained much support for his theory. The above remarks are written with a view of showing that the evidence which can be brought against the "Contagionists" is extremely strong.

GOVERNMENT OF BENGAL ADMINISTRATION REPORT, 1901 1902.

THE report for 1901 1902, like its predecessors, forms quite a handsome volume. There were 538 charitable dispensaries outside Calcutta at the end of 1901. The fact that these dispensaries serve larger areas and yet have a smaller average attendance than in most other provinces, is explained on the grounds that the medical schools in Bengal turn out twice the number of qualified practitioners as compared with similar institutions in Bombay and the Punjab, and it is alleged that native practitioners are to be found in every town or large village in Bengal.

The total number of patients treated in these mofussil dispensaries was 3,711,839, being an increase of 244,453, which was shared fairly equally amongst Hindus and Mahomedans. The total number of operations was 157,377, being an increase of 10,797. In Calcutta there was also an increase in the outdoor patients attending the various hospitals, the total was 253,615, and the increase was specially marked at the Medical College Hospital. The Sambhu Nath Pundit Hospital is also mentioned as specially popular. In the Calcutta hospitals there was an increase of 1,529 operations, the total being 27,552.

The total number of vaccinations in the province was 2,682,826, being an increase of 316,515. The average number for paid vaccinators was 1,080, as compared with 914 for each licensed vaccinator. The total number of deaths from small pox was 48,207, which shows that there is still much to be done for vaccination in Bengal. The total expenditure on Municipal vaccination was Rs 21,523. The best work was done in the Monghyr and Bhagalpur Municipalities, where each vaccinator performed over 1,400 operations at an average cost of three annas.

There is a very interesting section on the details of the last census, which was taken in 1901. At the close of the 18th century, the British territories in Northern India consisted of the provinces of Benares, Bengal, Behar and Orissa, with an approximate area of 97,200 square miles. The first published estimate of the population of Bengal, Behar and Orissa was made soon after the Company's accession to the Dewani when it was considered to be about ten millions. In 1787 Sir William Jones thought the population of Bengal, Behar, Orissa, and Benares amounted to about twenty four millions. In 1802 Mr Colebrooke computed the population to be thirty millions. In 1835 Mr Adams assumed the population to be thirty five millions. In 1844 the territories under the Bengal Government were much as at present, and Mr Dampier, the Superintendent of Police, estimated the population at 31,200,000. In 1857 the population was given as 40,852,337, and in 1870 the population was assumed to be slightly over forty two millions.

The first general census of Bengal was carried out in 1872, and the total ascertained was 64,649,406. Since then the census has been taken in 1881, 1891 and 1901. The present census gave a population of 78,493,410 which was obtained at a total expenditure of about Rs 3,90,000, or under Rs 5 per 1,000 of the population. This compares very favourably with the Rs 7,00,000, or over Rs 9 annas 7 per 1,000, expended in the 1891 census. This great reduction was obtained by the introduction of the slip system invented by Herr von Mayr of Bavaria, by improved record room arrangements, by lower pay to the men employed and by greater economy all round.

Prima facie there appears to be a progressive decline in the rate of growth of the population of the province of Bengal, but considerable allowance must be made for errors in the earlier enumerations. It is believed that plague, which appeared in 1898, accounted for 150,000 deaths, and the cyclone of the 24th October 1897 was responsible for about 50,000 deaths. Apart from this there does not appear to have been an increase in the death rate, the slower rate of growth of the population seems to be attributable rather to a lessened birth rate.

Taking Bengal as a whole, it appears that 95 persons out of every 100 live in villages, while only five persons reside in towns, the province being distinctly an agricultural country. The general standard of comfort is highest in Eastern Bengal although it has the smallest proportion of people living in towns.

The census of Calcutta and its suburbs shows a population of 951,000, but if Howrah is added, the figure rises to nearly 1,107,000, which is greater than that of any European city except London, Constantinople, Paris and Berlin and of any American City except New York, Chicago and Philadelphia. Two thirds of the inhabitants of Calcutta are immigrants and of these barely one fourth are females.

Hindus represent 63 per cent. of the total population, Muhammadans 33 per cent., while the remaining 4 per cent is composed of all other religions. Muhammadans have increased by nearly 8 per cent. as compared to a gain of only 4 per cent by Hindus. This increase of the Muhammadans is attributed to their being more prolific, to their diet being more nourishing, to the fact that their girls marry at a later age than Hindus, and to the re-marriage of their widows.

Service Notes

ASSOCIATION OF MILITARY SURGEONS, U S A

THE Medical Officers of the Army, Navy, Public Health and Marine Hospital Service of the United States, and of the Militia of the different States have been incorporated into "The Association of Military Surgeons of the United States." The object of the Association is to increase the efficiency of the medical services by the consideration of medico-military matters. Amongst the *ex officio* members are the Secretaries of the Treasury, War and Navy Departments, the Surgeon Generals of the Army, Navy, Public Health and Marine Hospital Services, who also constitute an Advisory Board. The Honorary Members include the President of the United States, the senior General, and the Senior Flag Officer of the Navy. The Association possesses a seal, a coat of arms, and insignia comprising a special cross and a button, the two last bearing the motto "*Omnia pro Patriae Caritate*."

SULPHUR FOR DYSENTERY

DR. J H DOUGLISS, who was recently a Civil Surgeon to the forces in South Africa, found that ipecacuanha had little or no effect on dysentery in that country. He got better results with calomel in small and frequent doses, along with tonics. Salines, dissolved in cinnamon water, and given hourly, often proved efficacious. But he is most enthusiastic over the use of sulphur in dysentery cases. In acute cases he advocates the administration of 20-30 grs of sublimed sulphur, combined with 5 grs of Dover's powder, made up with mucilage and flavoured with syrup of orange every four hours. In chronic cases he omits the Dover's powder, and gives smaller doses of sulphur. The advantages claimed for sulphur over ipecacuanha are the absence of vomiting, and the regular feeding of the patient is not interfered with, there being no enforced abstinence before and after the dose as in the use of ipecacuanha. He also recommends sulphur in chronic diarrhoea. "In conclusion, I must say, I place great faith in sulphur in the treatment of dysentery, not only from my own experience, but also from what I have heard from other medical men in South Africa. And I believe that in future dysentery will be treated by sulphur, combined with rest, diet and tonics."—*The Dublin Journal of Medical Science*, April, 1903.

I M S GRIEVANCES

THE Editor of *Truth* appears to have taken up the cudgels for the Indian Medical Service. In a recent issue he states that "It is no exaggeration to say that the Indian Medical Service is seething with discontent from the lowest ranks to the highest. Many of the grievances responsible for this state of things—first among them being the inadequacy of the pay, the worst in any of the superior services in India—have been ventilated in *Truth* from time to time." This grievance was dealt with in a long article which appeared in the *British Medical Journal* of the 31st January 1903, from which the following is quoted—

"The pay of officers of the Indian Medical Service in military employment is inadequate. This becomes clear when the rates are compared with those now received in India by the Royal Army Medical Corps, and the deficiency is especially marked in the junior ranks. It is a little

difficult to make a comparison in detail, as so many considerations arise, but the following table, we believe, fairly represents the case

	R. A M C			I M S	
	NEW			MILITARY	
	Old	Pay	Charge allowance	Total	Minimum Maximum
Lieutenant	Rs 350	Rs 420		Rs 350	Rs 400
Captain	350	475		350	450
Captain 5 years				450	600
" 7 "	450	530		500	600
" 10 "	500	650	60	710	800
Major	790	790	120	910	800
Major, 15 years	825	825	180	1,005	800
Lieutenant Colonel	1,060	1,060	180	1,240	1,000
Lieutenant-Colonel (selected)	1,150	1,150	240	1,390	900 1,100

"The comparison between the rates of pay of the R. A. M. C. and the I. M. S. is, however, to a certain extent unfair to the latter, since the whole of the service of an officer of the I. M. S. must be spent in India, whereas an officer of the R. A. M. C. may hope to spend part, possibly a considerable part, of his service at home."

"A comparison ought to be made with the pay of other public departments in India. An officer of the I. M. S. has sent us a table of the rates of pay in various departments in the most junior grade. The rates are in all cases expressed in rupees per mensem. They are all subject to the increase of 5½ or 6 per cent. for exchange compensation allowance."

	Pay	Travelling allowance	Total
	Rs	Rs	Rs
Indian Civil Service	400	150	550
Educational Department	50		500
Forest Department	350	120	470
Medical Service	350		400
Police	250	120	370
Public Works Department	350	120	470

APPOINTMENTS, LEAVE, &c

LIEUTENANT COLONEL S. H. BROWN, M.D., C.I.E., I.M.S., Principal and Professor of Medicine, Lahore Medical College, is appointed Inspector General of Civil Hospitals, Bengal.

LIEUTENANT COLONEL F. F. PERRY, F.R.C.S., I.M.S., Professor of Surgery, Lahore Medical College, is appointed Principal.

CAPTAIN D. W. SUTHERLAND, M.B., I.M.S., is appointed Professor of Medicine, Lahore Medical College.

CAPTAIN H. G. MELVILLE, M.B., I.M.S., is appointed Professor of Materia Medica and Pathology, Lahore Medical College.

THE services of Major R. J. Marks, I.M.S., are placed permanently at the disposal of the Government of the United Provinces.

LIEUTENANT H. E. J. BATTY, I.M.S., is posted to the Madras Command.

MAJOR R. J. MACNAMARA, M.D., I.M.S., has been appointed to act as Inspector General of Jails Bengal, during the absence of Major W. J. Buchanan, I.M.S., on ten months' leave.

CAPTAIN S. ANDERSON, I.M.S., acts as Superintendent, Central Jail, Bihar, during the absence of Mr. Sevenoaks on two and a half months' leave.

CAPTAIN W. H. DICKINSON, M.B., B.Ch., I.M.S., acts as Professor of Chemistry and Medical Jurisprudence and Chemical Analyst, Bombay, during the absence of Major T. D. C. Barry, I.M.S., proceeding on six months' leave.

MAJOR M. A. T. COLLIE, M.B., C.M., I.M.S., acts as Principal and Professor of Midwifery at the Grant Medical College and at the Jambhedji Jijibhai Hospital, Bombay, in place of Lieutenant-Colonel H. P. Dimmock, M.D., I.M.S., proceeding on seven months' leave.

CAPTAIN S. EVANS, M.B., I.M.S., acts for Lieutenant-Colonel W. G. H. Henderson, I.M.S., as Civil Surgeon, Poona.

CAPTAIN H. BENNETT, I.M.S., has been appointed Deputy Sanitary Commissioner, Gujarat.

CAPTAIN P. F. CHAPMAN, M.B., I.M.S., has been placed on special duty at Pachmarhi.

LIEUTENANT COLONEL W. A. QUAYLE, M.D., I.M.S., acts as Civil Surgeon and Superintendent, Lunatic Asylum, Jubbulpore.

CAPTAIN G. O. F. SEALY, I.M.S., acts as Civil Surgeon and Superintendent, Lunatic Asylum, Nagpur, in addition to being Special Plague Officer.

LIEUTENANT COLONEL D. ST. J. GRANT, M.B., I.M.S., acts as Chemical Examiner and Professor of Chemistry, Calcutta, during the absence on medical certificate of Major C. H. Bedford, M.D., I.M.S., for eight months.

MAJOR J. L. T. JONES, I.M.S., acts as Assay Master, Calcutta, for Lieutenant Colonel F. F. MacCaitie, C.I.E., who goes on eight months' leave.

MAJORS A. O. EVANS (Madras), M. A. T. Collie and W. H. Quicke (Bombay), all of the I.M.S., have been promoted to be Lieutenant-Colonels.

CAPTAIN G. T. BIRDWOOD, I.M.S., Civil Surgeon, Muttra, is granted six months' leave.

CAPTAIN A. MILLER, M.B., I.M.S., is attached to the Madras Laboratory as a probationer in the Chemical Examiner's Department.

MAJOR J. O. LAMONT, M.B., I.M.S., is granted six months' leave, and Lieutenant G. E. Charles, M.B., I.M.S., acts for him as Professor of Anatomy, Lahore Medical College.

CAPTAIN J. G. P. MURRAY, I.M.S., is appointed Civil Surgeon of Nudia.

CAPTAIN D. MCCAY, I.M.S., is appointed to act as Resident Physician, Medical College Hospital, and as Professor of Physiology, Medical College, Calcutta.

CAPTAIN E. O. THURSTON, I.M.S., is appointed to act as Resident Surgeon, Medical College Hospital, Calcutta.

CAPTAIN B. C. OLDEHAM, I.M.S., acts as Superintendent of the Campbell Medical School and Hospital, Sealdah.

CAPTAIN C. J. ROBERTSON, M.B., I.M.S., who has been engaged for some time on special research work regarding cerebrospinal fever, has been granted eight months' leave.

MAJOR T. E. DYSON, I.M.S., continues to act as Ophthalmic Surgeon, J. J. Hospital, Bombay.

CAPTAIN A. HOOTON, I.M.S., continues as Civil Surgeon of Bijapur.

CAPTAIN C. M. Goodbody, I.M.S., is transferred temporarily to the Jail Department in Lower Bengal.

THE services of the undermentioned officers are placed temporarily at the disposal of the Government of Bengal —
 Captain R. P. Wilson, I.M.S. (Bengal)
 Captain V. E. H. Lindesay, M.B., I.M.S. (Bengal)
 Captain J. G. P. Murray, M.B., I.M.S.
 Captain D. McCay, M.B., I.M.S.
 Captain E. O. Thurston, M.B., F.R.C.S., I.M.S.
 Lieutenant M. Mackelvie, M.B., I.M.S.

LIEUTENANT COLONEL D FFRENCH MULLEN, M D, I M S., Residency Surgeon, and Chief Medical Officer in Rajputana, is granted eighteen months' combined leave

DR. J L HENDLEY, on return from leave, is appointed to act as Health Officer, Port of Calcutta

CAPTAIN CLAYTON LANE, M D, I M S., has gone to Puri as Civil Surgeon, Captain A Cochrane, I M S, F R C S, to Chupra, and Captain C R Stevens, F R C S, I M S., to Mozufferpore

CAPTAIN D GREEN, I M S., on being relieved at Hazari bagh, went to Midnapore as Civil Surgeon

CAPTAIN P K. CHITALE, I M S., is appointed Civil Surgeon of Seoni

LIEUTENANT COLONEL R PEMBERTON'S leave expires on 11th November 1903

THE leave of Captain R H Elliot, I M S F R C S, does not expire till 21st September 1903. He is now spending the spring at Mentone

DURING the absence of Major O F Fearnside, I M S., at the Pasteur Institute, Kasauli, Captain W Lethbridge, I M S., acted as Superintendent of Prisons, Madras. Captain Lethbridge has since joined the Foreign Department

It is notified that the office of the Director General, Army Medical Service, has been removed from 18 to 68, Victoria Street, Westminster, S W

It is officially notified that the new scale of R.A.M.C pay is to have effect from 24th November 1902

I M S men are anxiously asking when their pay is to be increased. The present anomalous conditions cannot much longer remain without causing grave discontent.

CAPTAIN J G P MURRAY, I M S., has been appointed Civil Surgeon of Krisnagar (Nadu)

LIEUTENANT J C G KUNHARDT, I M S., was appointed to medical charge of depot of 4th Rajputs

IN the scheme for reorganising the Frontier Military Commands we note that the A M O of the Peshawar district is to be a Colonel, R.A.M.C., the A M O of the Kohat district is to be a Colonel, I M S., and of the Derajat district a Lieutenant Colonel, I M S.

WE note what seems to us to be a new departure, in that Major Elcum and Major E R DaCosta, I M S., retired, are appointed Lieutenant-Colonels, A M S. These belong to the Reserve of Officers

WE regret to record the death of Captain John Sloan, I M S., at Mhow on the 12th March 1903

SOME time ago we remarked that the early date of Colonel Hamilton's promotion to Colonel's rank was probably a record. This we find is not the case even in Bengal Surgeon Generals Harvey and Cleghorn beat the record and Surgeon General Scott Reid is not much behind, having become Colonel after twenty seven years and one and a half month's service. Sibthorpe, of Madras, also got very early promotion and also several Bombay men, whose records we are not at present able to trace

MILITARY ASSISTANT SURGEON A ALLISON is allowed three months' privilege leave

MAJOR O T HUDSON, I M S., is appointed Civil Surgeon of Nasik, but continues to act at Satara, and Lieutenant-Colonel Nariman acts at Nasik

LIEUTENANT COLONEL O H Channer, M B, D P H, I M S., is appointed Sanitary Commissioner, Bombay, *vice* Lieutenant Colonel J W Clarkson, I M S.

CAPTAIN E J O'MEARA, I M S., who has recently joined the United Provinces, is posted to Muttra, *vice* Captain O G Budwood, I M S., granted leave

LIEUTENANT COLONEL F F MACARTIE, I M S., went on leave on 17th April, and his place as Assay Master in the Calcutta Mint has been taken by Major Lloyd Jones, I M S.

ONE permanent and two officiating vacancies in Bengal have recently been filled up from the Punjab, *viz.*, Colonel Haslett Brown in place of Colonel Hendley, as Inspector-General of Civil Hospitals, Major R J Macnamara, I M S., will act for Major W J Buchanan I M S., as Inspector-General of Jails, and Lieutenant-Colonel Grant for Major Bedford as Chemical Examiner to Government

CAPTAIN A. F STEVENS I M S., Civil Surgeon of Arrah, will get three months' privilege leave to Kashmir, and Captain T H Delany, I M S., acts for him

CAPTAIN J G MURRAY, I M S., has been appointed to act as Civil Surgeon of Nadia

MAJOR O E SUNDER, I M S., Civil Surgeon of Gya, has been spending his leave in Canada, and writes enthusiastically about medical and surgical progress in the Dominion

CAPTAIN W E MCKECHNIE, M B, I M S., is appointed to act as Civil Surgeon of Bilaspur

CAPTAIN W H KENRICK, I M S., is appointed to act as Civil Surgeon of Nagpur

LIEUTENANT COLONEL G S A RANKING, I M S., has been granted six months' leave

THE services of Lieutenant-Colonel C C Manifold, I M S., and of Captain R G Turner, I M S., are placed at the disposal of the Government of the United Provinces

COLONEL J T B BOOKEY, C B, I M S., is granted the temporary rank of Surgeon General, whilst he officiates as P M O, Punjab Command

LIEUTENANT COLONEL H K MCKAY, C I E., I M S., is granted the temporary rank of Colonel whilst officiating as P M O, Kohat District

CAPTAIN A C MACGILCHRIST, I M S., acts as Professor of Comparative Anatomy and Zoology, Medical College, Calcutta, during the absence of Major A W Alcock, I M S.

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis if requested

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BOOKS, REPORTS, &c, RECEIVED

Elementary Hygiene for Indian Students. By Major C H Bedford, M D, D S C I M S. (S K Lahiri & Co., Calcutta)
International Catalogue of Scientific Literature, 2 Vols. (1) Physics, (2) Physiology

A Manual of Practical Surgery for Students and Practitioners. By Lieut.-Col C P Lukis, M B, I M S, I M S. (Victoria Press, Agm.)
Report of the Political Administration of the Central India Agency, 1901-1902

Manual of Practical Anatomy, Vol I, 3rd Ed. By D J Cunningham, M D (Young J Pentland, Edinburgh and London)
Operative Surgery. By H W Allingham, F R C S (Ballière, Tindall and Cox, London)

LETTERS, COMMUNICATIONS, RECEIVED FROM —

Lt Col W h Hatch, I M S., Norwich. Lt Col G M Giles, I M S., Rome. Major O H Bedford, I M S., Calcutta, Capt H M Moore, I M S., Bombay. Capt B Chatterton, I M S., Gaya. Major F P Maynard, I M S., Calcutta, Major W J Buchanan, I M S., Aden, Capt Clayton Lane, I M S., Puri. Capt Robertson Milne, I M S., Kasauli, Hon. Secy, Asiatic Society of Bengal. Dr E W Lewis, Cuddapah District. Dr A F Caro, Madrid. Capt W G Fridmore, I M S., Bhamo, Capt E E Waters, I M S., Port Blair, I F Goldsmith, I M S., Shan States. Lt, Col T H Pope, I M S., Madras, Dr Arthur Powell, Bombay.

Original Articles

SOME MODERN VIEWS ON PRIMARY GLAUCOMA

By R. H. ELLIOT, M.B., B.S. (LOND.), F.R.C.S. (ENG.),
CAPTAIN, I.M.S.

It has been the writer's good fortune to meet a large number of European ophthalmologists during the past year, and to have the privilege of discussing with many of them their views on glaucoma. So wide has been the divergence of opinion expressed on matters of great importance, that it has seemed not impossible that the subject may be of interest to Indian surgeons, in view of the number of cases of this disease met with in Indian practice. The present paper is an effort to collect and expose some of the modern views, without however pretending to enter exhaustively into the subject.

The Aetiology of Glaucoma—We may pass this heading over with but scant notice, as there is practically no difference of opinion here. All those conditions which disturb the circulation and cause congestion of the venous system, are liable to bring about an attack of the disease. The influence of mydiatics is everywhere admitted, though this class of drugs is still strangely abused, both in Europe and in India. Priestley Smith's views on age and sex as factors, and on the predisposition of small eyes are widely accepted, if his opinions on the influence of accommodative strain and of hypermetropia are received with more caution. Heredity and racial predisposition are generally suspected of playing a not unimportant rôle.

The Pathology of Glaucoma—It would not be incorrect to say that the great majority of ophthalmologists at the present time feel that we still have much to learn on this subject. A short review of the various theories, which have hitherto appeared, may be therefore pardoned.

(1) Von Graefe attributed the disease to a hypersecretion due to serous choroiditis.

(2) Donders, likewise, believed hypersecretion to be the cause, but accused the ciliary nerves of being at the bottom of the mischief. As Fuchs neatly puts it, he believed in "a neurosis of secretion."

(3) Stellwag taught that an elevation of pressure in the vessels of the uveal tract was in itself sufficient to raise the tension of the eye to a pathological point. The diminished elasticity of the sclera, and its shrinkage as age advanced, co-operated to oppose the free escape of fluid from the eye, especially in the region of the points of exit of the vasa vorticosa, whose oblique paths through the external coat of the eye rendered them the more liable to feel pressure. Czerniak and Binnbacher also believed that an

increase in intraocular pressure opposed the escape of blood from the eye. V. Grönholm* vigorously attacks these views, which he contends are utterly unsupported by the evidence of anatomy or by that of experimental research. On the one hand, he has found by experiment that an increase of pressure within a normal eye produces not a condition of stasis in its vessels, but the very reverse. From this he gathers that the dilatation of the blood vessels, and especially of the ciliary veins in a glaucomatous eye, is not to be ascribed, as is usually done, to an increase in the intraocular tension of the globe. These results appear to be supported by Priestley Smith's conclusions, drawn from the experiments described on p. 632 of Vol. III of Norris and Oliver's *System of Diseases of the Eye*. On the other hand, Grönholm has ligatured the vasa vorticosa in rabbits, without producing any lesion resembling glaucoma.

The allied views of Goldschmidt, according to which an obliteration of some of the vessels of the iris is supposed to bring about congestion of the rest of the uveal tract, and those of Ulrich who would trace the same phenomena to sclerosis of the vessels of the iris, find equally little favour with Grönholm, who demolishes them by arguments, into which we need not enter.

(4) Knies made the first real progress, when he attributed the increase of intraocular tension in glaucoma to an adhesion between the sclera and the root of the iris. He was unable to explain the cause of this adhesion, which he accordingly put down to an inflammation. He was, however, the first to trace the elevation of tension 'to obstruction to outflow.'

(5) Weber, working independently on the same lines, found that the cause of obstruction to the outflow at the sinus of the anterior chamber was the swelling of the ciliary processes, which pressed the root of the iris forward. Thereby the sinus was obliterated, and the loose meshwork of the ligamentum pectinatum was compressed and rendered impervious, thus cutting off the normal flow of fluids into Schlemm's canal.

(6) Then followed Priestley Smith's valuable work on the disproportionate increase in the size of the lens, as life advances. He explained that the circumferential space was thus narrowed, and the outflow of lymph from the vitreous into the posterior division of the aqueous chamber was accordingly hindered. The increased volume of the vitreous pushed the large lens and with it the ciliary process forwards, thus shallowing the anterior chamber, and tending to obliterate the sinus.

While Priestley Smith's views have received the widest acceptance, they are generally admitted not to cover the whole ground. Other factors undoubtedly exist.

* *Vide Zeitschrift für Augenheilkunde*, Band V, 1901.

(7) Jacobson and Sulzer ascribe the congestion in a glaucomatous eye to cardio-vascular trouble, or to local vascular paralysis. The vascular stasis once produced would, according to their views, produce hypersecretion, hypertension, displacement forwards of the lens and iris, etc. I have met not a few surgeons who lay great stress on the importance of looking for arterio-sclerosis, cardiac changes, etc., in all cases of glaucoma.

(8) Professor Lapersonne has recently on several occasions* drawn attention to the views of the late Professor Panas who in his 'Recherches sur le Glaucome, etc,' which he wrote in collaboration with Rochon-Duvigneaud, expressed himself to the following effect: 'The plastic closure of the irido-corneal angle is not the *first cause* of glaucoma, it cannot be so. A sclerosis of the retinal vessels has been proved to exist both by clinical and by anatomical evidence. Is it impossible that such a change in these vessels may lead to circulatory troubles within the eye, or that the outcome of these same troubles may be swelling and cedema of the vitreous? If such changes are admitted, have we not at once the existence of an element which may be the first cause of a glaucomatous attack?'

(9) V Gionholm, in the article already quoted above, throws out the suggestion that there may be cases of glaucoma, in which the initial phenomenon is the retention of fluid, and in this connection Priestley Smith's words are of interest. He writes, in Vol III of Norris and Oliver, p 651, as follows—"Changes in the hyaloid membrane, in the vitreous tissue, or in the fluid itself are possible impediments to filtration, and in eyes blinded by glaucoma, we often find the hyaloid and the septa of the vitreous thickened or coated by albuminous coagula."

(10) And lastly, though far from least, we have the views of Abadie which, for their practical bearing alone, demand the close attention of all who have to treat cases of this disease. It is only to be regretted that the opposition he has met with appears to have driven this learned and able writer into the excess of rejecting all views but his own, and one's regret is the more sincere since there is so much of value in his writings, if only they are taken side by side with the work of others, instead of an unnecessary opposition to them. Abadie holds that glaucoma is the result of a morbid stimulation of the vaso-dilator fibres of the eye, or of their nuclei of origin. In dealing with the relationships of the simple and congestive forms to each other, I shall have occasion to point out the paths along which he believes the morbid influences to travel. His views appear at some length in the February, 1899, number of 'Les Archives d'Ophthalmologie,' and should be read side by side

with his pamphlet 'La nature et traitement du Goître Exophtalmique,' published by J Thevenot, Saint-Dizier (Hte-Marne), Paris. He has endeavoured to trace what Panas spoke of as the 'primum movens' of glaucoma, and while being unable to agree with many of his statements and deductions, most ophthalmologists will find much that is valuable in his writings.

I repeat that I do not pretend that this article is in any sense exhaustive, but, at least enough has been written on the pathology of this obscure disease to illustrate Fuchs' trenchant remarks: "So far, therefore, no explanation of glaucoma has yet been propounded which is satisfactory in every respect. The reason for this is, perhaps, to be found in the statement that all cases of primary glaucoma probably do not develop in the same way, so that one explanation could not possibly fit all cases. And, in particular, it might be possible that glaucoma simplex and inflammatory glaucoma would have to be referred to different causes."

This leads us naturally to the consideration of the closely allied question of *The Relationship existing between Simple and Congestive Glaucomas*.

It is first necessary to have a clear comprehension of what we mean by the term 'Simple Glaucoma.' I have met a number of ophthalmologists who confine this appellation strictly to those cases which present 'the triad of symptoms,' and nothing more. This triad consists of (1) cupped disc, (2) retracted field, and (3) diminution of visual acuity. Others, again, while admitting that they encounter cases thus strictly limited in their symptomatology, group them with those in which high tension, etc., are present, but in which congestive symptoms are conspicuous by their absence. Abadie, from the point of view of treatment, unhesitatingly relegates any case in which 'the morbid phenomena manifest themselves by intermittent crises' to the same class as the acute and subacute glaucomas (*vide* 'Les Archives d'Ophthalmologie,' Février, 1899). Fuchs, on the other hand, includes under the simple form cases in which there occur 'transient slight attacks of obscuration, like those belonging to the prodromal stage of inflammatory glaucoma.' The significance of these observations will be obvious, when we recall the Vienna Professor's words, with which I closed our consideration of the pathology of this disease. There he suggests his doubts as to whether the simple and chronic forms can really be one in origin, and yet a few pages earlier (pp 375 and 376 of his 1902 edition) we find him summing up in favour of their being included together under the common heading of "glaucoma proper." He admits that, in many cases of the simple variety, no increase of tension can be demonstrated, but considers that cupping of the disc is, in itself, sufficient evidence of increased pressure, and suggests that

* Leçon d'ouverture du cours de Clinique Ophthalmologique de la Faculté de Médecine de Paris, 1901, and elsewhere.

in such "the lamina cribrosa is particularly yielding, so that it is forced backwards by a pressure which does not perceptibly rise above the normal limits" He at the same time admits that we are here dangerously near the class of cases in which an unusually deep excavation accompanies an atrophy of the optic nerve. He lays stress on the need for frequent examinations of the tension in doubtful cases, and "especially at different times of the day," and reminds his readers of the "numerous intermediate varieties which form a continuous transition from simple to inflammatory glaucoma, so that no sharp line of distinction can be drawn between the two," again he reminds them that in its later stages a simple glaucoma "often passes into acute or inflammatory glaucoma," and yet again that in cases in which inflammatory glaucoma is present in one eye, glaucoma simplex may be found to supervene in the other which is affected afterwards. He does not, however, lose sight of the facts that the simple variety is always a binocular disease, that it attacks the young as well as those advanced in years, that it affects men as frequently as women, and that it does not spare myopic eyes. Nothing, indeed, could be more suggestive of the present state of the ophthalmological mind on this subject than the extraordinary hesitation here displayed in the writings of one of the most erudite and careful of living eye specialists.

These observations form an apt setting to the remarks which I publish in my Sweden Notes in this journal as falling from Nordensen 'that a more accurate classification of the simple forms of glaucoma is needed'

On the one hand, it is far from easy to distinguish optic atrophy with cupping from the affection now under consideration, and on the other, the very variable reaction of the more marked cases of simple glaucoma to operation appears to indicate that there is a considerable difference between the various cases thus gathered under one head. These points may be now taken up in turn.

The diagnosis from optic atrophy must rest (1) on the character of the edges of the cup, (2) on the early colour-blindness in atrophy, (3) on the relation of the blind-spot to the scotoma in glaucoma as brought out by Bjerrum's method of perimetry dealt with in my Danish Notes, and (4) on the general condition of the nervous system.

The diagnosis of the simple form, from the very slowly progressive cases of the congestive variety, or from those cases which may at some future time take on a congestive habit, is if possible even more difficult, since every shade of gradation between the two is met with.

Rogman of Ghent* has insisted strongly on the regrettable confusion which has arisen, in this subject, from want of precise observation of cases. While admitting that in the present state of our knowledge, as pointed out by deWecker, Schweigger and others,† it is impossible to arrive always at a definite differential diagnosis, he urges that the effort to do so, founded on precise observations, will do much to clear up the doubts which now surround the subject. His obvious tendency is, however, to include under one heading all cases of *true glaucoma* not omitting those in which the triad of symptoms is alone present, and to separate such from the class in which a disease of the optic nerve is primarily to blame. After reviewing and endorsing the usual evidence in favour of the unity of the glaucoma-group, he admits the uncertainty as to result, which ever attends on operation for simple glaucoma, owing to the difficulty of making a certain diagnosis. An observation made to me by Gullstrand of Upsala, probably one of the ablest of living ophthalmologists, appears particularly pertinent here. It was to the effect that 'he was chary of operating on cases of simple glaucoma, in which the tension was not markedly increased but that he thought the *presence of a shallow anterior chamber in a case distinctly improved the prospect of an iridectomy being of service*' Professor Snellen (Senior) told me he considered that all cases of simple glaucoma would be shown to present occasional increases of tension, if examined frequently at different times of day and night, and especially if tested in the middle of the night. Landolt holds much the same views, believing that in all cases of true cupping there has been, at some antecedent time, a period of raised tension.

I may be permitted to so far anticipate as to briefly review here some of the diverse opinions, expressed by surgeons I have met, on the advisability of operating for simple glaucoma. Volckers of Kiel, Nordensen of Stockholm and others, never operate unless there is distinct increase of tension. Juda of Amsterdam, while imitating this practice, goes so far as to admit no case as one of glaucoma unless it presents a perceptible rise of tension. Pagenstecher, Snellen, Tacke, Rogman, Landolt, Priestley Smith and others, advocate operation in a certain number of the simple cases, provided they will not yield to other treatment. The amount of selection exercised varies considerably with each individual surgeon. Bjerrum of Copenhagen, like Gullstrand and many others, is *seldom persuaded to operate* in simple glaucoma. Without farther multiplying instances, it must be obvious that all this

* Belgique Medicale, 1898, No 45, La Clinique Ophthalmologique, 10th April 1899, and Annales d'Oculistique, Juin 1900.

† deWecker—Le faux glaucome, Ann d'Oculistique, t. CXVI, p. 249. Schweigger—Glaucom und Sehnervenleidee Archiv f. Aug. Bd XXIII, s. 209.

diversity of opinion, on the value of operative interference in a disease, whose progress is so uniformly towards absolute blindness under less heroic treatment, indicates the gravest uncertainty as to our true position. The views of Abadie and of another (nameless at his own request), both of which strive to throw light on the origin of our difficulties, cannot therefore be destitute of interest and may form a fitting close to this section.

Abadie's views have been already broadly indicated in this paper. It remains to briefly point out the relationship between ordinary and simple glaucoma as conceived by this observer. Hippel and Günthagen's experiment, whereby they produced in an animal an attack of acute glaucoma by stimulating the cut end (proximal) of the fifth cranial nerve, is interpreted by him as owing its significance to the accidental excitation of vasomotor dilator fibres running within the nerve-sheath, and probably proceeding from the bulb. Many will fail to agree with the interpretation which he places on the occurrence of a glaucoma supervening in a healthy eye, as the result of an operation on its glaucomatous fellow, or with his application of Dastie and Moiat's experiments to the case at issue, but the possibility remains that the fibres indicated may be the paths along which the hyper-excitation stimuli of congestive glaucoma travel. In simple glaucoma, he believes that the impulses of vasomotor stimulation pass along fibres of the cervical sympathetic, which go to form the carotid plexus, then, having accompanied the carotid artery through the cavernous sinus, they find their way thence to the ciliary ganglion. Hence arose his proposal, which we will return again to discuss later, to attack the superior cervical ganglion in these cases, or at least to cut the fibres which leave that ganglion to join the carotid plexus. Those who are interested in the subject are referred to Abadie's papers already quoted in this article, and to Lapersonne's paper on 'Hydrophthalmie et troubles cardio-vasculaires' in the September number of *Les Archives d'Ophthalmologie* for 1902. Lapersonne considers that the relationship between buphthalmos and glaucoma is undoubted and close, and that the 'primum movens' of both are to be sought in the vascular theory of the disease to which vasodilatation gives us the key. Space forbids our dwelling on the subject any farther.

The other views, I referred to, were suggested to me by an ophthalmologist of no mean standing. It is admitted that they are nothing more yet than a suggestion. According to them the first stage in a case of glaucoma is *an increase in the volume of the vitreous*. This may be due to defective osmotic action. One cannot, however, go beyond the statement that *the osmotic tension of the vitreous is increased*. Next we have a *resistance to the increase in volume of the vitreous*. Such a resistance may show itself in one

of two ways, *viz* (a) by traction of the choroidal and scleral fibres on the edge of the optic papilla, thereby causing the characteristic undermined excavation of glaucoma, or (b) by increased tension of the vitreous, which will cause that body with the lens to move forward and block the filtration angle. Now, which of these two events will occur first depends, as does also their sequence when both occur in turn, on unknown factors, of which the shape of the eye is probably an important one. If traction predominates or occurs alone, we have a simple form of glaucoma with cupped disc, retracted field, and diminished V. A., occurring along with a deep anterior chamber. In such, operation is useless. If, however, tension comes first or supervenes later, we find the chamber shallowed, and must then resort to iridectomy, in order to relieve the filtration angle. The view that a distension of the choroid and sclera may cause excavation of the optic papilla, by traction on its edges, was, I believe, advanced in 1893 by Schoen, in his book "*Die Funktionskrankheiten des Auges*" published in Wiesbaden.

To sum up, under the term Simple Glaucoma, we have in the past included (1) cases in which the prime factor was disease of the optic nerve, (2) cases in which the triad of symptoms alone occur, and (3) a long series of cases passing insensibly from the last class and merging at the opposite end of the scale into well-marked congestive glaucoma. It is our duty to carefully distinguish the atrophic cases, and to place them apart. There is an undefined feeling prevalent that the two latter groups may, with the tide of advancing knowledge, be separated from each other, by a better comprehension of their pathology. If such a result is ever attained, the hesitation in operating for simple glaucoma will be largely broken down, and we shall no longer feel that every such operation is an experiment, the end of which it is impossible to foresee with certainty.

We may now pass on to consider shortly

THE TREATMENT OF GLAUCOMA

Of the rational and medicinal measures there is little to say, since all are practically agreed on the subject. The use of myotics, the avoidance of sources of worry, sleeplessness, exhaustion and strain, and the most scrupulous attention to the general hygiene of the patient, are obvious indications. If such means fail we must, however, fall back on operative measures.

We may take up in turn the various operations, which have been proposed for the relief of this disease.

1. *Posterior Sclerotomy*—This proceeding has been advocated by Priestley Smith,* "as an adjunct to sclerotomy or iridectomy." Its effects

* Priestley Smith's Lectures, p. 161, and Norris and Oliver's System, Vol. III, p. 680.

are too transient to render it of any value alone, but he recommends it (a) as a test-operation, when there is known to be a tendency to hæmorrhage, (b) in painful glaucoma, when a general anæsthetic is inadmissible, and (c) in very advanced cases, where the possibility of recovering useful sight is doubtful. He adds "The result may justify and facilitate the performance of an iridectomy a few days later." I have often performed this simple and easy little operation, and have been led to form a high opinion of its value, which has, however, been somewhat shaken by the reception I find it has met with amongst Continental eye-surgeons. There is little doubt that it is widely regarded as an unjustifiably dangerous procedure, and indeed I could not discover that any foreign surgeon of standing resorted to it. It is objected to because it interferes with the vitreous.

2 *Sclerotomy*—This operation, sometimes spoken of as 'Anterior Sclerotomy,' was introduced by deWecker,* and has been modified by Snellen and other surgeons. It, for a time, almost superseded iridectomy, but there is little question that it has greatly disappointed the expectations which it at first raised, and that it is gradually and steadily declining in popularity. For buphthalmos, and for conditions of high tension, associated with a deep anterior chamber, sclerotomy is still widely used, but this marks the limit of its general adoption at the present time†. Haab of Zurich is absolutely the only surgeon I have met who still practises routine sclerotomy in preference to iridectomy. He lays stress on carefully enlarging the apertures of entrance and exit, whilst withdrawing his knife, and on not wholly emptying the anterior chamber. The latter precaution is said to save the patient much unnecessary pain. Haab does not hesitate to repeat the operation *several times at short intervals*, if need be, and his confidence in the results thus obtained must be admitted to carry great weight. I must confess that it was no small surprise to me, on meeting the two late champions of sclerotomy, Snellen and deWecker, to find that both have greatly modified their views. Snellen told me that he 'considered iridectomy the safest operation for glaucoma,' while de Wecker though he makes a preliminary sclerotomy, *follows it four days later by an iridectomy*. He appears, too, to have abandoned his intermediate operation of 'Combined Sclerotomy,' which, by the way, consisted in an operative detachment of a part of the iris base through a large scleral incision‡. Eversbusch, of Munich, practises a combination of sclerotomy and iridectomy which, so far as I could understand, is identical with the operation known as sclero-

tomomy*. Abadie has found the results of sclerotomy too transient, and has abandoned the operation. Greeff, of Berlin, never uses it, believing that if any good can be done by operative measures iridectomy is our best method. Von Michell of Berlin, Bjerrum of Copenhagen, and Widmark of Stockholm all look on sclerotomy as only a last resource. Nordensen of Stockholm, de Haas of Rotterdam, and Pagenstecher of Wiesbaden, rarely if ever use the operation, while Gullstrand of Upsala, Volckers of Kiel, Rogman of Ghent, Landolt and Lapersonne of Paris, and many others expressed to me their preference for iridectomy, which they practise freely. Juda of Amsterdam, Tacke of Brussels, and Krükoff of Moscow, still prefer sclerotomy to iridectomy in the earlier stages of glaucoma, but fall back on iridectomy in more advanced cases. Schœder of St Petersburg, reserves sclerotomy for those cases in which the anterior chamber is very shallow.

3 *Iridectomy*, though near its jubilee, having been introduced by Von Graefe in 1857, is still our undoubted operative mainstay for glaucoma. My strong impression, after discussing the subject with many well-known ophthalmologists, is that sclerotomy only continues to exist on sufferance, as a result of the natural hesitation which must often exist in a surgeon's mind as to whether an operation is justifiable or not in a particular case. Thus, as already seen, we find sclerotomy preferred (1) in early cases, where the patient is still ignorant, and the surgeon still doubtful of the extent of the coming disaster, (2) in late cases, where it is felt that little can be hoped for from any interference, and where nevertheless inactivity can only end in disaster, (3) where iridectomy has failed and therefore the case is desperate, and lastly (4) in simple glaucoma, in which it is felt to be so doubtful whether any operation is justifiable, that not a few choose the procedure of least magnitude. I write this deliberately, but yet with no wish to be cynical, and with no thought of criticising those from whom it has been my privilege to learn. I believe that the modern ophthalmologist undertakes iridectomy with a much more expectant heart than that with which he performs sclerotomy.

As to the main outlines of the technique of the former procedure, most are in accordance with Fuchs who lays down that, "the wound should lie in the sclera" and that "the excision of the iris should be carried to the ciliary margin, and be made as broad as possible." He also advocates that "it is best to operate as early as possible." Pagenstecher lays stress on the iris being cut snip by snip, so as to remove it up to the edge of its attachment, along the whole length of the incision. A well-known ophthalmologist expressed the opinion to me that

* *Chirurgie Oculaire*, Paris, 1870, p. 207.

† *Trans Internat Ophth Congress*, Edinburgh, 1894.

‡ *Trans Internat Ophth Congress*, Edinburgh, 1894.

* *Nicati Revue Générale d'Ophthalmologie*, January 1894.

the essential element is to get the section of iris carried 'right up to the periphery at one point at least,' if this be done, he thinks all requirements to ensure success are satisfied. Abadie again goes so far as to say that provided 'the whole width of the iris' is included in the section, 'a simple slit' is all that is required to effect a cure, if indeed the case admits at all of cure by iridectomy. Pageusticher and Rogman are probably followed by many in their practice of selecting the worse eye first, and watching the result thereon, before attacking the iris of the second. This is a line of conduct which is especially indicated in simple glaucoma. It is likewise in this class of cases that one must bear in mind Abadie's experience, that the results of sympathectomy are distinctly vitiated by any preliminary operations on the iris.

Priestley Smith advocates a "scleral puncture made immediately before a glaucoma iridectomy, *z c*, at the same sitting." He thinks this diminishes the risks of the operation. I have used this 'combined operation' with advantage.

In comparing iridectomy with sclerotomy, it must not be assumed that the balance of safety lies wholly with the latter operation. I have seen very skilful surgeons greatly embarrassed by prolapse of the iris into their punctures. Needless to say such a misfortune, which is far from rare, entails a subsequent iridectomy under difficult and disadvantageous circumstances.

Sympathectomy finds its rôle, according to Abadie, in those cases in which the 'triad of symptoms' alone is present, and in which medicinal and rational general treatment fails to arrest the disease. All cases which present 'intermittent crises,' even though hypertension and pain are absent, he relegates to the group, which may be benefited by iridectomy. Even transient obscurations of vision, or the occasional presence of coloured rings around flames, are sufficient, in his view, to justify a hope of cure from an operation on the iris. While his results are still inconclusive of permanent cure, they fully justify the removal of the superior cervical ganglion or the section of its branches, in what is otherwise a hopeless class of cases. The brilliant results obtained by Abadie and others in operating for the relief of the closely allied phenomena of exophthalmic goitre, afford us additional encouragement. The papers in which Abadie and Lapeyronne set forth their views and their experience of the procedure have been already quoted, and it only remains now to briefly describe the operation, which, by the way, Abadie performs himself, while Lapeyronne calls in a general surgeon for the purpose. These are Abadie's words: "Double resection of the cervical sympathetic under ether. The cervical sympathetic is sought by the aid of an incision, extending from the mastoid process to the inner third of the clavicle. This incision enables us to pass behind the sterno-mastoid, and to draw

forwards and inwards the large vessels and nerves of the neck, after having divided the external jugular vein, and some branches of the superficial cervical plexus. The sympathetic now appears as a thin white band, attached to the longus colli by the prevertebral aponeurosis." The superior ganglia are said to be easily found, and resected, or otherwise dealt with. It is probably sufficient to simply divide the branches passing from the ganglion to join the carotid plexus.

Space does not permit me to enlarge on this interesting subject any further. In conclusion I would ask permission to invite the attention of those who have read thus far to a few other matters of more than ordinary interest in connection with glaucoma, which I have dealt with elsewhere in this journal. These are (I) a more accurate method of registering changes in tension invented by the late Professor Maklakoff of Moscow (*vide* my notes from Russia, *I M G*, May 1903, p 177), (II) Bjerrum's method of perimetry and its results (*vide* Notes from Denmark, *I M G*), (III) Dark perimetry by Willbrand's method, and the same surgeon's special method of conducting an ordinary perimetric observation (*vide* Notes from North Germany, *I M G*, April 1903, p 153), (IV) Professor Greeff's special glass perimetric room (*vide* Notes from Berlin, *I M G*, March 1903, p 107), and (V) Golowin's method of resecting the optic nerve, in painful cases of glaucoma absolutum (*vide* Notes from Russia, *I M G* for May, 1903, p 177). Lastly, I would again repeat that this paper makes no pretence to be exhaustive, but aims rather at being a record of personal impressions on the present state of ophthalmological opinion. These impressions have been mainly derived from conversations on the subject with many eminent surgeons, supplemented by such of their writings as they have been good enough to present me with.

A NOTE ON ANOPHELES FULIGINOSUS AND SPOROZOITS

By J. R. ADIE, M.B. (LOND.),

MAJOR, I.M.S.

Ferozapore

THE object of this short paper is to call attention to two facts—firstly, the finding of sporozoits in a variety of *Anopheles fuliginosus* in the natural state, and, secondly, the variations to which a species is liable.

Regarding the first point, recent study has shown that while many, if not all, *Anopheles* may experimentally carry malarial infection, practically only two Indian species are known to do so in the natural state. These are—

- A. *Culicifacies*—Giles.
- and A. *Fluviatilis*
- = A. *Christophersi* (Theobald)
- = A. *Listoni* (Liston) .

The former is very common in the Punjab, the latter has not so far been met with in these parts. With regard to *A. Fuliginosus*, S. P. James says (Sc. Mem., 2, Malaria in India, 1902, p. 39) "Experimentally we have shown that the parasites of quartan, tertian, and malignant tertian malaria will develop in this mosquito. We have not, however, found it infected under natural conditions." On the 31d of March I dissected an anopheles of the fuliginosus group (the full description of which I will refer to later), in whose salivary glands I found sporozoites. The slide was treated with Leishmann's stain after fixing in alcohol, and showed the characteristic fusiform, or curved, or sickle shaped bodies in very large numbers, and possessing almost always one or two dots of chromatin in the middle. The specimen has been kindly examined by Captain S. P. James and Dr. Christophers, and these gentlemen have no doubt about the nature of those sporozoites.

In the second place, I wish to refer to the variability of species. Everybody is now familiar with the extremely useful and simple classification of Indian anopheles by James and Liston, and will remember the systematic importance of the number of white bands on the palpal. Most authorities also, Theobald and Giles for instance, lay stress on the number of pure white hind tarsi, and on the number of white spots on the costa and fringe of the wing, such differences constituting a basis for the separation and making of species.

To make clear the point of this note, it will be necessary to recall the chief characters of *A. Fuliginosus*. These are—

Number of palpal bands	3	P	3
Number of pure white spots on the black wing—Costa	6	}	CF 13
Fringe	7		
Number of pure white tarsi of the hind leg	3 and a little bit, T		$\frac{1}{3}$ bit

On the 24th November 1902, I came across my first variation. It was a black (or very nearly black) anopheles found with other typical *A. Fuliginosus* specimens. It had four white bands on the palpal, the third and fourth being very narrow, in fact, the ordinary distal band of *A. Fuliginosus* divided into two by a ring of black scales in the middle. There was no difference in wing-margin and hind leg.

As the cold weather advanced other specimens of the same fuliginosus stock were captured, having only two pure white hind tarsi, with three or four white palpal bands. There were also variations in the distribution of white scales on the veins, especially of the third longitudinal.

Here, therefore, were differences of apparently high specific value, and the question arose at once "Had we one or more new species?" During the cold weather, I collected over 200 of these black anopheles, and found these charac-

ters in all kinds of combination, ranging from an ordinary typical *Fuliginosus* to one with four bands and two pure white hind tarsi.

I give here a series showing variation in these two respects. I do not mention costa and fringe spots, as they are liable to obliteration in capture—

No	P	T	No	P	T
660	3	$2\frac{1}{2}$	688	3	$2\frac{1}{2}$
661	4th forming	$2\frac{1}{2}$	689	3	$2\frac{1}{2}$
663	4	$2\frac{1}{2}$	690	4	$2\frac{1}{2}$
664	4	$2\frac{1}{2}$	692	4th nearly complete	$2\frac{1}{2}$
665	3	$2\frac{1}{2}$	694	new born	3
667	3	$2\frac{1}{2}$	697	3	$2\frac{1}{2}$
668	4th began	$2\frac{1}{2}$	699	4	$2\frac{1}{2}$
669	3	$2\frac{1}{2}$	716	3	$2\frac{1}{2}$
670	3	$2\frac{1}{2}$	717	4	$2\frac{1}{2}$
671	4	$2\frac{1}{2}$	718	3	$2\frac{1}{2}$
672	3	$2\frac{1}{2}$	719	3	$2\frac{1}{2}$
673	4	$2\frac{1}{2}$	720	3	$2\frac{1}{2}$
674	4	$2\frac{1}{2}$	721	3	$2\frac{1}{2}$
675	4	$2\frac{1}{2}$	722	3	3
676	4	$2\frac{1}{2}$	723 nb	3	$2\frac{1}{2}$
679	3	$3\frac{1}{2}$ bit	724	4	3
680	4	$2\frac{1}{2}$	725	3	3
681	3	$3\frac{1}{2}$ bit	726	3	3
682	4	$2\frac{1}{2}$	727	3	3
683	4	$2\frac{1}{2}$	728	3	3
684	4	$2\frac{1}{2}$ bit	729	3	3
685	4th forming	$2\frac{1}{2}$	730	3	3
686	4	$2\frac{1}{2}$	731	3	3
687	4th forming	$2\frac{1}{2}$	732	3	3
			733	4	3
			734	3	3

27 3 03

These mosquitoes (*Fuliginosus* stock) flourished from about November to April, and were taken from a very circumscribed area surrounding the termination of a navigating canal, about a mile from this city. In the very cold weather they were the only anopheles obtainable anywhere in these parts. They came into season about the end of November associated with *A. Culicifacies*, and as this species began to fall off they themselves fell off about April, when *A. Culicifacies* began to come in again, and latterly only the ordinary kind of *Fuliginosus* has been sparingly met with.

I sent specimens of these variations to James, asking his opinion. Before he gave it, or admitted a new species, he wished to see the results of breeding out, and I accordingly, after many difficulties due to the extremely cold weather, succeeded in breeding out the eggs of two specimens. In the meantime, James came across the same kind of mosquitoes in Lahore, and from an examination of the larvae at his disposal, conjectured that these variations were merely a "winter variety" of *A. fuliginosus*, as the larvae were all alike.

Here are the results of breeding out in No 667 and No 750.

No 667, Costa 5 spots distinct.

Palp, 3 bands, but signs of black scales on under surface of last segment—i.e., 4th band forming.

Tarsi— $2\frac{1}{2}$, pure white.

Captured 8th February, 1903.

14th February 1903—Eggs plentiful.

20th February 1903—Hatched.

Captain James, pointing out that those new sporozoites would account for occasional winter malarial attacks, led me to fancy this new variety of *A. fuliginosus* might possibly have the exact function of filling in the gap caused by the entire absence of *A. Culicifacies* in the very cold months. I have already stated *A. Fuliginosus* and its variety are the only anopheles procurable in the very cold weather in this part of the country.

THE DISSEMINATION OF ENTERIC FEVER BY DUST

By A R ALDRIDGE,

MAJOR, R A M C,
Sanitary Officer, Bengal Command

THE following experiment, though a single one, may be of interest as confirming those of others,* but with the conditions adapted as nearly as may be to those existing in most Indian cantonments.

A case of enteric fever was found, the urine of which contained the B typhosus in considerable numbers. This bacillus was worked out in the various media named below to prove its identity. A box was filled with dry sand from the floor of a barrack latrine, and the surface of this moistened with the urine, this was repeated on the two following days. On the fourth day, the sand being sufficiently dry to be easily blown about, it was blown by means of bellows over sterile broth exposed about two feet distant. The broth was incubated at 37°C for 24 hours, one loopful was then mixed with 10 c.c. of sterile water. Plates of glucose-litmus-agar† and lactose-taurocholate-agar‡ were streaked from this, and likely colonies examined. Only organisms answering to the following tests were classed as B typhosus —

- (1) Typical appearance of colonies on the media
- (2) Microscopical appearances of the B typhosus (They were not stained to show flagellæ)
- (3) Agglutinated by serum from a case of enteric fever in the highest dilution that agglutinated the laboratory culture
- (4) Not stained by Gram's method
- (5) Producing uniform turbidity in broth
- (6) Milk not coagulated
- (7) Glucose-agar stab, no gas formation
- (8) Lactose-litmus-peptone solution, no acid or gas
- (9) Gelatine not liquefied
- (10) Glistering, transparent growth on potato
- (11) Indol not formed

* Firth and Horrocks, *B M J* September 27th, 1902, and Phul, *Zeitschrift für Hygiene*, Vol XL, p 555

† Horrocks' *Bacteriological Examination of Water*

‡ Thomson Yates, *Laboratories' Report*, Vol. IV, Part I

In this way I succeeded in isolating the B typhosus from the dust on the 1st, 4th and 9th days after it had been moistened with the urine.

I also exposed certain food substances to the dust, but failed to isolate the B typhosus from them, owing, I believe, to the technique used, but hope to repeat the experiments when opportunity offers.

CASES ILLUSTRATING DIFFICULTIES IN PLAGUE DIAGNOSIS

By W J BUCHANAN, M B,

MAJOR, I M S,

Supdt., Central Jail, Alipore,

AND

Dr W O HOSSACK,

Special Plague Medical Officer, Calcutta

THE following history of a small outbreak of plague in the Central Jail at Alipore is put on record as it well illustrates the difficulties which confront a medical officer called upon to diagnose and take measures to prevent the spread of plague in an institution such as a large jail with 2,000 prisoners. The outbreak of plague in the jail commenced on 28th February, 1902, at a time when plague was epidemic in Calcutta, and it had never before appeared in the jail. The first case, Chand Sheik, æt 28, had been in jail for four weeks, and had been employed in an outside gang for six days before his attack in unloading coal from boats at the Jail Ghât on Tolly's Nulla, he slept in Ward 20 in No 9 enclosure*. The second case, Tez Ali, came to hospital on 1st March with high fever and swollen glands in left axilla, he had been 24 days inside the jail and had been employed, inside the walls, in the jute mill. He came from a ward quite separate from the first, and no connection could be traced between the two, the third case, Shah Malik, came to hospital on 2nd March, he had worked outside the jail walls, in a gang employed in the outside cow-house and not far from the Coal Ghât on the side of Tolly's Nulla. He slept in No 9 workshed (used as a temporary sleeping ward owing to overcrowding) and therefore in the same enclosure as Case 1, but in a different building, and may also have come in contact with the first case when the outside gangs were marched back to jail daily. The fourth case, Lachman Gwala, was a mild one, and suffered only from two days' high fever and a swollen gland, which suppurated, in front of the left elbow. He slept in Ward 18 which has a common staircase with Ward 20, but worked on bag-sewing in a different yard (No 8).

The fifth and last case was Jhagru Goial, admitted to hospital on 7th March from Ward 20,

* Enclosure No 9 has opening from its sleeping Wards 20, 19, 18 and 17.

he had been two months in jail and had been inside all the time and worked in the jute mill. Therefore in the course of eight days (28th February to 7th March) five plague cases occurred, four of them from wards belonging to No 9 enclosure, and one from a quite different ward, No 3, at the other end of the jail.

Two of the five cases worked outside the jail walls, and the first case may (possibly) have contracted the disease from the boat coolies who came with the coal, though of this there is no positive evidence. The third case might conceivably have got the infection from the same source. The fourth and fifth at least came from the same enclosure as cases 1 and 3, but how the second case got the infection it is impossible even to guess.

About the same period, from 25th February to 10th March, several other cases were admitted, which were at least and at first open to the suspicion of being plague.

The first of these was a deaf and dumb boy nearly five months in jail who was admitted to hospital on 25th March (*i.e.*, three days before the first plague case). He came also from Ward 20 (No 9 enclosure), but had never been outside the jail since his arrival. His case was a strange one, being deaf and dumb it was difficult to get much out of him, but his fever ran on for sixteen days, high fever, much cough and certainly considerable pain in several joints, and also on deep pressure in the groins or lower abdomen. He was at first considered to be a case of rheumatism or arthritis, and several of his joints were certainly swollen and painful, but he ultimately recovered completely after some three or four weeks only in hospital. The high fever, the delirium and the pain on pressure in the groins made us look upon and treat him for a time as a possible case of plague. He was probably a case of pulmonary influenza with broncho-pneumonia with fever for sixteen or eighteen days as is not unusual. The second disturbing case was a man, named Manni Khan, *æt* 32, seven weeks in jail, who worked in a cell at bag-sewing, but slept in one of the wards (No 18) belonging to No 9 enclosure. He came to hospital complaining of great pain in the neck and high fever (105° F). This proved to be only tonsillitis, and the fever disappeared in about 36 hours. A third case was a female, who suddenly got high fever and delirium on 4th March. This occurring in the midst of the epidemic led to her being removed from the F ward as a possible case of plague, but the fever subsided in two days after a purge and 30 grains of quinine and did not recur. It was probably a malarial relapse. A fourth case was still more important and puzzling. This was a boy, admitted on 4th March, Ram Lall, seven months in jail, who worked in the jute mill but slept in the infected enclosure No 9. This case was one of high fever, early delirium, great prostration, a certain

degree of opisthotonos, and great pain in the head. The diagnosis lay between cerebro-spinal meningitis and plague, Kernig's symptom was not clearly made out, and pressure in the axillae and groins, even when the patient was sunk in coma, always elicited distinct expressions of pain. He died on the third day, and the autopsy disclosed *no swollen glands*, no extravasation of blood, but on removing the brain several greenish-yellow patches of purulent matter were found on the surface, as well as around the base, also turbid fluid in the lateral ventricles and spinal canal. The lower lobe of right lung was hepatized, and the right lung weighed 15oz. *Purplish pink healthy glands* were found in both groins.

Specimens of the lungs and turbid fluid were sent to Dr L. Rogers, Professor of Pathology, Medical College, Calcutta, who did not find the diplococcus intracellularis (as he had often done in other cases of cerebro-spinal fever in Calcutta), nor did he find the plague bacillus, but only some cocci, probably streptococci.

On the 7th March there was also admitted to hospital a man, from No 8 ward, with a large inflamed bubo in his right groin, accompanied by high fever. He seemed at first sight a typical case of bubonic plague, but a sore was found on the great toe of the right leg and the bubo rapidly suppurated, and on being opened a pint of pus was evacuated, the fever disappeared, and the man rapidly recovered.

Next came, to add to the difficulty, on the 8th and 10th March, two cases of pneumonia, both ran the course of a severe attack of influenzal pneumonia, the fever and acute symptoms lasting for eleven and fourteen days respectively, but both recovered.

At the same time seven cases of mumps came to hospital, but though examined with some anxiety they really presented no difficulty in differential diagnosis.

Here then we have in the space of some fourteen days five cases of plague (two pneumonic, rapidly fatal, three bubonic, one fatal, two mild and recovered), one case of severe pulmonary influenza, two cases of severe lobal pneumonia, probably influenzal, one case of tonsillitis with high fever (105° F), one fatal case of fulminant cerebro-spinal meningitis, one case of delirium and high malarial fever, and a case of inguinal sympathetic bubo with high fever, not to speak of seven cases of mumps, and a dozen or more of boys sent to hospital by the anxious Hospital Assistant with old chronic enlarged glands in the groins, with or without fever or other symptom. It is remarkable how many of these Calcutta juvenile criminals have enlarged glands in the groin, and when such a boy gets a little fever and makes much moan as the Hospital Assistant presses his groins, it was not surprising that many such found their way to the ease and comfort of the jail hospital.

We may add that in the three (out of five plague cases examined) the bacillus pestis was found by Dr Rogers. The occurrence of two plague cases of a certainly mild type with swollen glands and high fever lasting only for a day or so is interesting especially when contrasted with the first rapidly fatal bubonic case; and the other (non-plague) case of suppurating "sympathetic" bubo. Influenza, which was then prevalent in the jail, is another factor disturbing the diagnosis, and without the aid of bacteriology it is by no means easy on the first or second day to decide upon the nature of the pneumonic cases. Since the above outbreak, and during the unseasonable rainy weather of May, two fatal cases of lobar pneumonia have occurred along with many other cases of influenza of all degrees of severity, and in these two the bacteria of influenza have been found by Dr Rogers.

COLOPEXY FOR PROLAPSUS RECTI

By R D MURRAY,

LIEUT COL., I M S,

Professor of Surgery, Medical College, and Surgeon to the Medical College Hospital, Calcutta

MY reason for venturing to draw attention to this operation is that it does not appear as yet to have taken the position it deserves as a recognised surgical procedure. It is not even mentioned in Jacobson's last edition of "The Operations of Surgery." In my opinion it is far the best operation for dealing with this most distressing and intractable disease. It is not only scientific in principle, but easily performed and absolutely safe in competent hands.

My distinguished predecessor, Lieutenant-Colonel Kenneth McLeod, first conceived the idea of anchoring the sigmoid flexure to the abdominal wall in 1890, and describes at length a successful case operated on by him in the *Lancet* of July 19th of that year. His method which involved the transfixion of the bowel by pins passed through the abdominal parietes has been modified with the rapid march of surgical progress, and a safer and simpler plan is now adopted.

I believe Dr Arnold Caddy of this city some years ago described a case which he operated on successfully by an inguinal laparotomy and stitching the sigmoid to the parietal peritoneum at the margin of the wound. I am sorry I cannot lay my hands on his paper, but it is alluded to by Enchsen.

In the *Indian Medical Gazette* for November 1902, Major D M Mon, I M S, publishes a successful case under the name of Sigmoidopexy. His method is substantially the same, I believe, as Caddy's operation.

My procedure is different in two respects. In the first place I make my abdominal incision in

the linea alba, and in the second place I stitch not the bowel but the meso-colon to the anterior abdominal wall.

I have operated on two very exaggerated cases with complete success.

The usual primary union took place with rapid and uneventful recovery and absolute cure of the prolapse with all its attendant misery. No pain or uneasiness were ever complained of at the seat of fixation, and the bowels moved well and regularly.

Technique—The patient having been thoroughly prepared and the bowels attended to, I make a three-inch incision in the linea alba just clear of the bladder. On opening the peritoneum, the left forefinger is introduced and hooks out the sigmoid flexure which lies in very close relation to the wound. Traction is now made on the gut and by observing the anus move as you pull, you make sure that you have got hold of the right end. Keeping up the traction, you now give the bowel to your assistant to hold to prevent relaxation and proceed to stitch the meso-colon to the parietal peritoneum on the left side of the abdominal incision about an inch from its edge. I insert four silk stitches half an inch apart. Each stitch embraces about half an inch of meso-colon and parietal peritoneum respectively, thus affording a strong and secure hold. Care must be taken while passing the needle into the meso-colon, to keep it quite superficial for fear of wounding any of the numerous large blood-vessels which lie immediately underneath. A Hagedorn's needle passed on the flat is the best for this purpose. Having introduced the four stitches, they are then tied one by one, the ends cut short, and the abdominal wound closed.

Remarks—By operating in the middle line the bowel can be drawn upon and fixed in its natural axis, and there is less risk of a ventral hernia supervening than when the inguinal route is adopted. By stitching the meso-colon, and not the colon itself, to the abdominal wall there is more play allowed for peristalsis and less danger of subsequent kinking.

A Mirror of Hospital Practice.

CASE OF STRANGULATED INGUINAL HERNIA PERFORATION OF THE BOWEL RESECTION OF 7 INCHES OF GAN- GRENOUS GUT RECOVERY

By W H BURKE, B A, M B, -B CH,

LIEUT COL., I M S,

Goculdas Tejpal Hospital, Bombay

EBRAHIM KHAN, aged 30, a fairly robust Mahomedan, admitted to the Goculdas Tejpal Hospital on the afternoon of the 30th March 1903.

Patient stated that three days before admission while walking with a heavy load on his head he felt a sensation of something having given way, and simultaneously felt severe pain and noticed a swelling on the right side of his scrotum. He stated that this was the third time that the hernia had come down, but that on the two previous occasions he had been able to return it, and that he wore an improvised suspensory bandage to keep it in place.

Patient stated that the bowels had been constipated since the hernia came down. On the night of the 30th the patient was very restless, and vomiting of a stercoraceous character set in.

Patient was seen by me on the morning of the 31st March, and at 11-30 A.M. was brought under the influence of chloroform.

On opening the sac a quantity of liquid feces escaped. The hernia was found to be a large enterocele containing many coils of small intestine much inflamed and matted together, while one loop was in a gangrenous condition, and in this portion a perforation of the gut (as shown in the attached photograph) had taken place.

Photograph showing the 7 inches of gangrenous gut removed. Specimen preserved in alcohol.



The dark portion A shows the perforation. After freeing the constriction, which was at the internal abdominal ring, I decided to resect

the whole of this gangrenous gut and to suture the cut ends. I divided the mesentery gradually, ligaturing it piecemeal with catgut sutures. The cut ends of the gut were brought into careful apposition by a series of catgut Lembert's sutures, after which I was pleased to see the united gut inflate like a bicycle tube.

I then returned the whole hernia cautiously into the abdomen, divided and closed the sac above with catgut sutures, returned it into the abdomen, and sutured the pillars of the ring with two deep silk-worm gut sutures. I removed a portion only of the lower part of the sac, and did not dissect out the whole sac as I usually do, as the patient's condition was such as to indicate the advisability of rapidly terminating the operation. I put in a small rubber drainage tube, making a counter-opening in the scrotum below, and closed the wound, using silk-worm gut for the buried and silk for the skin sutures.

The antiseptic used before opening the sac was biniodide of mercury, afterwards boracic acid and saline solution were used. One hypodermic injection of digitalis and æther was given during the operation.

The patient was fed entirely by enemata (eggs, milk and brandy) for 4½ days. On the evening of the 5th day 3i of Brand's Essence of Beef was given every three hours. On the 6th day besides this he was allowed by the mouth 1 oz. of a mixture of one part of cream to two parts barley water. On the 9th day he was given 4 ozs. of Benger's Food every two hours in addition. The nutrient enemata were gradually discontinued, while his food by the mouth was gradually increased, but he did not resume his ordinary diet until 4 weeks after the operation.

During the first 24 hours after the operation the patient passed five stools which were offensive and contained blood-stained serum, but from that time on the stools became normal in appearance and free from abnormal fecal matter.

The wound was dressed on the 1st April, and the drainage tube removed; subsequently it was dressed every third, and finally every fourth day only.

There was no suppuration. The patient never complained of any pain. A little thickening remains around the cord where the lower portion of the sac was left. The hernial opening is apparently permanently closed. The patient walked on the 27th day and left the hospital on the 5th May.

The patient's temperature after the operation never rose above 100°F, and it reached that point on two occasions

only. It was usually normal or subnormal. I was assisted at the operation by my House Surgeon, Assistant-Surgeon Lafond, and for the

careful nursing of the case, I am indebted to charge-Nurse Flynn

Remarks

I consider that this case is interesting as the result is much better than what I could have expected if I had followed the course usually adopted in a case such as I have described, viz, the removal of the gangrenous gut and the making of an artificial anus, which would either have remained, or have had to be dealt with by a subsequent partial laparotomy, with greater resultant tendency to hernia

Mr William Thorburn in his interesting paper on an analysis of 110 operations for strangulated hernia published in the *British Medical Journal* for April 25th says "The condition of the intestine varied within the widest limits, but actual gangrene or perforation had occurred in 10 instances only," also that in nine of the 27 (fatal) cases the intestine was gangrenous or perforated by ulceration, of ten cases with perforation or gangrene only one recovered In only two cases of the 110 published by Mr William Thorburn was resection of the gut practised, and both of these cases died within a few hours I hope, therefore, that this case may be of some interest to the profession

LIGATURE OF THE RIGHT COMMON ILIAC ARTERY FOR DIFFUSED ILIAC ANEURISM

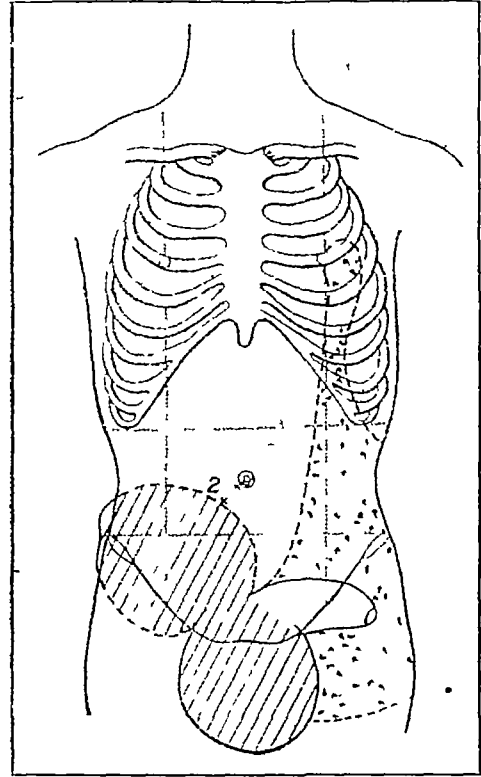
By F P MAYNARD, M B, I R C S (ENC),
MAJOR, I M S

Surgeon Superintendent, Mayo Native Hospital, Calcutta

A *Manwari*, aged 32, was admitted to the Mayo Hospital on April 17th, 1903, suffering from a diffused iliac aneurism, with the following history He had never had any venereal disease Four or five months ago he noticed a pulsating lump in the right groin It grew gradually larger for one month Then he had severe pain in it, and it increased more rapidly Ten days ago he went to pass a stool A few minutes afterwards he said he felt as if a gush of wind ran from his abdomen into his scrotum, and he then noticed also swelling of the penis and scrotum with stretching pain There has been constipation since, but no vomiting He has eaten very little and has had fever

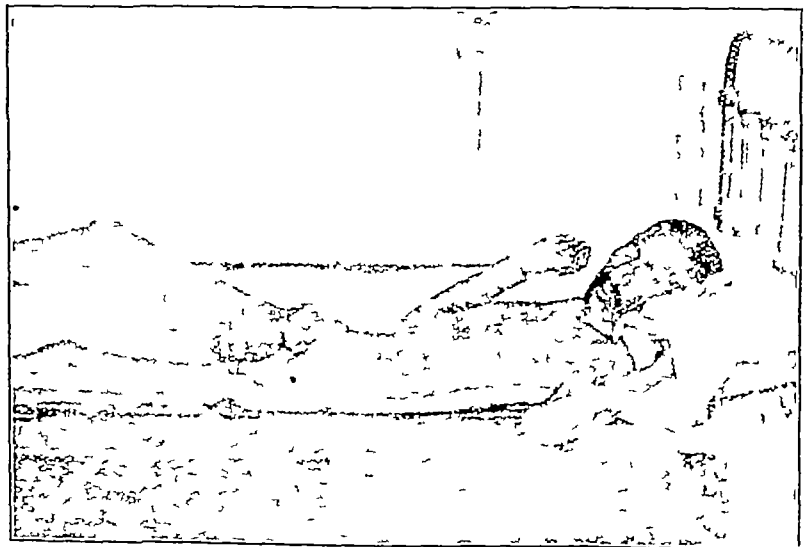
He is a tall spare man with anxious expression Tongue moist and coated Pulse 99 Respiration normal Temperature 100.8° There is a large, tense, rounded, pulsating swelling occupying

the right inguinal region, extending from 2 inches below the navel to well below Poupart's ligament, the size of a six-months baby's head This swelling is continuous with the swollen scrotum, which also has expansile pulsation synchronously with the heart's systole There



Diffused Iliac Aneurism of the Right Common Iliac Artery

is a loud and rough systolic bruit heard all over the pulsation area (striped in the diagram), but loudest at its upper and outer portion The penis is very cedematous The abdominal wall shows brown discoloration (subcutaneous hæmorrhage—marked with dots in the diagram) as high as the left nipple, and this discoloration



There is a large, tense, rounded, pulsating swelling occupying the right inguinal region, extending from 2 inches below the navel to well below Poupart's ligament, the size of a six-months baby's head This swelling is continuous with the swollen scrotum, which also has expansile pulsation synchronously with the heart's systole There

extends downwards over the left thigh as well. The pulsation in the aneurism stopped on pressure being applied over the abdominal aorta (at the time of operation). There was no crackling or irregularity anywhere in the tumour. Pulsation in the right femoral and tibial arteries was weak. There was much pain in the swelling and down the thigh. He had a cough, but no physical signs of disease in the lungs or elsewhere. Urine normal.

On the 18th April the fever was less. On the 19th he had two stools, and the straining increased the pain and swelling. Some râles were heard over the back. On the 20th morning an anæsthetic black patch was noticed on the scrotum, and he was prepared for operation. Both legs and thighs were sterilised and wrapped in antiseptic wool, as it was thought the abdominal aorta might have to be ligatured in consequence of the aneurism extending so nearly up to the navel.

At 5 P.M., Dr M. N. Chatterji, Resident Medical Officer assisting, the abdomen was opened in the middle line by an incision 4 inches long, passing to the left of the umbilicus. On introducing the hand, the aneurism could be felt filling the right iliac fossa, but leaving enough common iliac artery free for ligature and apparently quite healthy. The wound was enlarged one inch upwards and another downwards, the latter opening up some of the subcutaneous hæmorrhage and causing troublesome bleeding. The intestines gave great trouble and could not be kept out of the way, so, as there were no arrangements handy for the Trendelenburg position, the whole of the small intestines were drawn out and wrapped in warm sterilised towels. The operation then became perfectly simple, and the abdominal aorta could have been tied just as easily as the common iliac was. An electric light facilitated matters immensely. Kangaroo tendon had been obtained for ligaturing the vessel, but proved to be old and brittle, and finally three strands of silk were passed round the vessel from the outer side through a hole in the peritoneum made with dissecting forceps. The ligature was only drawn moderately tight, the inner coats not being cut through. The hole in the peritoneum was not sewn up. Nothing was seen of the iliac vein or the ureter. The intestines were replaced, the peritoneum sewn up by a continuous fine silk suture, and then the skin and rectus sewn by interrupted deep silk-worm gut sutures and superficial horse-hair in between. Calcium chloride was given (gr. xx) with iodide of potassium (gr. v) three times a day for two days before operation. During the operation strychnine (gr. $\frac{1}{10}$) was given hypodermically, morphia (grain $\frac{1}{4}$) after it, and two pints of warm saline solution injected into the rectum. There was no pulsation in the aneurism after the application of the ligature. On the 21st he developed

bronchitis and vomited at intervals. On the 22nd he was a little better, but had not passed any wind, and the abdomen was a little tympanitic. On the 23rd he passed wind 'with a loud noise'. The toes and scrotum were sensitive and warm and the aneurism hard. Bronchitis better. Given calomel. On the 24th wind and fæces were passed several times. The cedema of the penis was much gone down and the vomiting stopped. The heat was very great (106° in the shade), and he was restless. On the 25th slight diarrhoea began, everything otherwise being well with him. On the 26th and 27th he seemed to be doing well also, though having a few stools and occasional vomiting, the incision appeared to be healed, and the aneurism going down in size. On the evening of the 27th he had several loose stools and died rather suddenly about 11-30 P.M. No post-mortem was allowed.

Remarks—The *diagnosis* in this case was not a matter of much doubt. The only other thing it could have been was sarcoma of the iliac bone. This was excluded mainly because of the even consistence and expansile pulsation of the tumour, and, at the operation, by the direct feel of it and its behaviour on direct digital compression of the abdominal aorta. It was also of rather rapid growth for a sarcoma. The history, too, of sudden diffusion and extension of the pulsation to the scrotal swelling, are quite different to anything met with in the progress of a sarcoma. The treatment of the case was largely determined by the fact of the aneurism having become diffused. Pressure of the abdominal aorta was in this case unjustifiable, and the choice lay between ligature of the main artery above (Hunterian operation) and the 'old operation' of opening the sac, clearing its contents or removing it with them and tying all its supplying vessels (Antyllus' operation). Though this operation has, with the help of asepsis and antiseptics, we all believe, returned to stay, it would, I think, in this case have proved a very hazardous proceeding. It is one thing to carry it out on a circumscribed sacculated aneurism of moderate size with the surrounding tissues comparatively healthy, quite another to attempt it with a large sac ruptured and blood diffused indefinitely.

The Hunterian operation was therefore performed. As regards method, the intra-peritoneal operation would have been chosen even had the diffusion of the aneurism not rendered any other incision impossible. Its ease and simplicity, the certainty of knowing and seeing what you are doing, and therefore the impossibility of ligaturing the ureter or iliac vein or various nerves as well as the artery, are all in favour of it. The question of intra- versus extra-peritoneal operation for ligature of the main iliac vessels is discussed in the last edition of Mr Jacobson's *Operative Surgery*, 1902, Vol. II, p. 22, and the general opinion is coming to be in favour of intra-peri-

toneal operation, the main difficulty met with being the management of the intestines. If Trendelenberg's position does not obviate this difficulty, the only thing is to lift them bodily out, and keep them clean and warm as has been done by several surgeons as well as in the case now reported, and as is done without hesitation nowadays in cases of intestinal obstruction or intussusception.

The mortality of this operation is given by Jacobson, but as the figures given were collected some years ago later statistics are probably more favourable. In the 65 cases collected by Dr Packard only 35 were for aneurism. Of these 24 died, 9 recovered, and in 2 the result is not stated, giving a mortality in the 33 cases of 72.72 per cent. No mention is made if any of the aneurisms were diffused, but if they were the mortality in them was probably higher than in the circumscribed. Had the case now recorded come a week earlier, the result might have been different. As it was the patient lived more than seven days, the incision had healed, the aneurism had consolidated and begun to shrink, and the leg had escaped gangrene, but—and no amount of success in or after operation can compensate for that—the patient died.

A CASE OF LIGATURE OF THE EXTERNAL ILIAC ARTERY FOR FEMORAL ANEURISM

By F. NEST W. LEWIS, M.B., Ch.B.,

London Mission Hospital, Jummalamadugu, S. India.

EARLY in July 1902, a Hindu, of the farmer caste, came to the out-patient department of our hospital, complaining of a large pulsating tumour in the right groin which rendered walking very difficult and painful. The history of the case was not so difficult to obtain as it usually is from these people. About four years previous to the date of admission, the patient was at work on his field when suddenly, while walking fast across rough ground, something seemed to give in his right groin, "saying 'cluck,'" as the expressive vernacular phrase is. He suffered some pain, but was able to continue his work.

Native remedies were applied without good effect, and a month after a small swelling appeared which was noticed to pulsate.

This steadily grew in spite of the external applications (including the actual cautery, marks of which can be seen in the photographs) and medicines given internally.

The patient had been treated in several hospitals with potassium iodide and several other drugs, but the tumour had steadily grown in size, and the pain had much increased, so that, when admitted, he was almost unable to walk.

There was no external traumatism of any description, but apparently some strain had been thrown upon the vessel while walking, causing the feeling of something giving way.

On examination a large pulsating tumour was found in the right groin as represented in Fig. 1. The area of pulsation, shown by the circular white line marked D, was found to extend, about $\frac{1}{2}$ inch superior to Poupart's ligament, and its longest diameter (E) was $5\frac{1}{4}$ inches, the other diameter represented (F) being $5\frac{1}{2}$ inches.

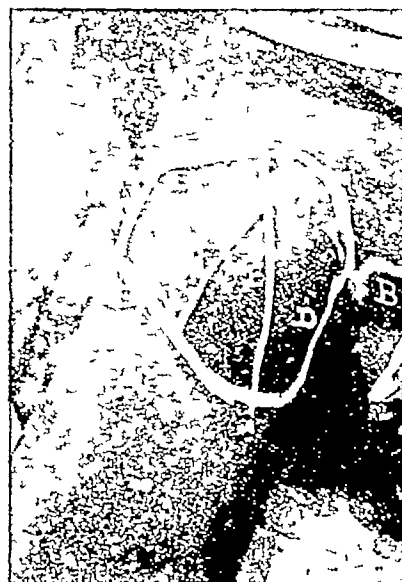


Fig. 1

A=Anterior Superior Iliac Spine B=Outline of Pubis
C=Poupart's Ligament D=Outline of pulsating tumour
E=Diameter of tumour, $5\frac{1}{4}$ " long F=Diameter of tumour, $5\frac{1}{2}$ " broad

A history of syphilitic chancre many years previously was obtained, but no atheroma or thickening of arterial walls could be felt in any other part of the body, though carefully looked for. There was nothing abnormal in the heart sounds, but the patient was somewhat anæmic and much run down.

On 18th July chloroform was administered, and an incision of three inches in length was made, $\frac{1}{2}$ inch above the outer half of Poupart's ligament and curved upwards at its outer end. After the layers of the abdominal wall had been cut through the peritoneal margin was defined and then held out of the way by retractors, whereupon the external iliac in its whole length could be felt. The margin of the pulsating tumour was to be found involve about $\frac{3}{4}$ of an inch of this vessel. The sheath of external iliac was then cleaned about $\frac{1}{2}$ inch above the limit of the tumour, and the vessel walls being seen to be healthy, a ligature of stout silk was applied to the artery. Pulsation in the tumour ceased immediately, and the wound was sewn up, the abdominal walls being stitched with silk layer by layer, and the skin wound by silkworm gut. A cyanide gauze dressing was then applied.

The whole leg was enveloped in cotton-wool and bandaged, and the patient put back to bed.

For three days after operation the patient was restless, making all nursing difficult. The leg was never very cold, nor was there any numbness or pain in it. On the 5th day a very faint return of pulsation could be felt in the anterior tibial artery.



Fig. II

A=Anterior Superior Iliac Spine B=Pubes C=Poupart's Ligament. D=Outline of tumour exactly four weeks after operation E=Diameter $3\frac{1}{2}$ " The scar of the operation wound can be seen.

The wound healed by first intention, the stitches being removed on the 10th day. There was never any return of pulsation in the tumour, and recovery was uninterrupted.

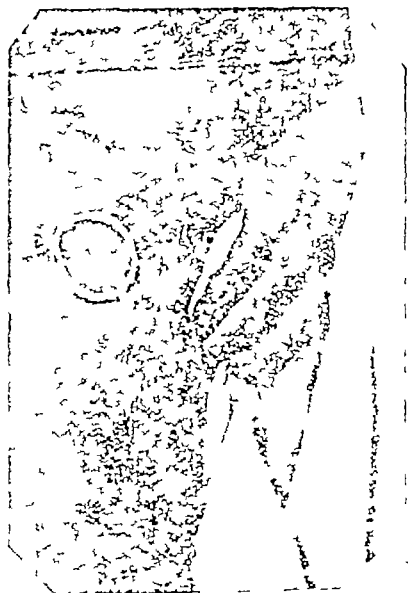


Fig. III

A=Anterior Superior Iliac Spine B=Pubes C=Poupart's Ligament D=Outline of tumour six months after operation. Operation scar still visible.

Fig. 2 represents the size of the tumour exactly four weeks after operation. The diameter E was then $3\frac{1}{2}$ inches in length, and the tumour hard and solid on palpation. The patient was discharged a few days after this photograph was taken, able to walk without pain.

Six months after operation the patient came back to show himself. He was then in good general health, and the tumour, as shown in Fig. 3, about the size of a small Tangeine orange, quite hard and painless.

The patient could walk freely and without pain, and was in no way inconvenienced by the small tumour remaining in the groin. There was still no further sign of arterial disease.

In view of the recent Lister jubilee celebrations the recording of the case is of particular interest, the early statistics of this operation having so large a mortality, and this case having been done under conditions that would not have been considered specially favourable in England.

TWO CASES OF RUPTURE OF THE LUNG OF UNCERTAIN ORIGIN

By E. E. WATERS,

Captain, I.M.S.,

Offg. S.M.O., Port Blair and Nicobars.

THE two cases recorded below occurred within eight days of one another, and appear to be of sufficient interest for publication. Convict (8953) Abdul Rahman, aged 50 years, hospital washerman, was admitted into Bamboo Flat Hospital at mid-day, July 9th, 1902. He complained of a severe pain in his side.

History—The man had thirteen years' service in Port Blair, and during that time had several admissions for malarial fever, two for acute diarrhoea, and one in 1892 for bronchitis. He was a fairly healthy, muscular man, performing his daily work regularly and without complaint. On the morning of July 9th he came as usual to fetch his bundle of clothes for washing. Having collected these in the lower barrack, and made them into the usual dhobi's bundle, he proceeded to go to the upper barrack, distant some 200 feet up a steep ascent.

On arriving at the top of this slope, he complained of a severe tearing pain in the right side of the chest. He had met with no violence or accident, but this pain had attacked him suddenly whilst coming up the hill. He was particularly definite about the tearing character of the pain.

The man was at once taken into hospital and given morphia, with much temporary relief, a little later pain recurred, and the patient became restless and thirsty. Ice was now given. At about 9 P.M., there was profuse expectoration of blood which did not yield to ice, eight

and the usual remedies. The hæmoptysis continued, restlessness increased, and the patient became pulseless, he sank rapidly and died at 11 P.M., less than twelve hours after his admission into hospital, frothy fluid blood flowing from the mouth and nostrils at the time of death.

Post-mortem examination—Twelve hours after death. Eyes sunken, features pale, frothy blood oozing from mouth and nostrils, no marks of violence. On opening the skull, the brain was congested and the vessels of the membranes engorged. Each of the lateral ventricles contained clear serous fluid.

Thorax—Right pleural sac contained about 16 ounces of thin sanguineous fluid mixed with dark blood clots of small size. The right lung weighed 38 ounces, and was extensively and firmly adherent. On removing it a rupture was found on the outer surface of the upper lobe. This rupture was one inch long, half an inch broad and a quarter of an inch in depth, the rupture being covered with a dark clot.

The lung was dark red in appearance and in section in different parts of it, the larger vessels and bronchioles were found to be filled with partly clotted blood, and the lung tissues also filled with dark frothy fluid blood.

The left pleural cavity was healthy and empty. The left lung was not adherent and weighed 22 ounces, it was dark red in appearance, especially so at the base. On cutting into it, a similar appearance was observed to that presented by the other lung, the vessels and bronchioles being filled with partly clotted blood.

The mucous membrane of the larynx and trachea were congested and covered with dark frothy blood.

The pericardial sac was empty and healthy. The heart weighed ten ounces and was of normal appearance. The right side was full of clots, the left side empty, valves were healthy and the heart muscle firm. No atheroma of aorta or pulmonary vessels.

Peritoneum—Healthy, no fluid.

Liver—54 ounces. Healthy.

Spleen—12 ounces, malarial.

Kidneys—Congested, weight together 10 ounces.

Stomach—Healthy and empty. *Intestines* healthy.

CASE II—Here the history is not so clear, for the man was not seen during life. Abdul Salem (35) was a free resident and worked as a servant to an old woman who kept cows and sold the milk. Being a free man, nothing is known about his previous medical history.

On July 17th, 1902, the deceased did his ordinary work on the field during the day, and took his evening meal about 5 P.M.

At 7 P.M. when he was milking a cow, he felt faint and dropped to the ground. A woman who was with him immediately came to the

hospital for a *dhooli*, but on her return she found the man dead.

The case was investigated by the police, but they could elicit nothing regarding a quarrel, or any struggle, so no further action was taken.

Post-mortem examination—Seventeen hours after death.

Body fairly nourished, features shrunken and pale. Rigor mortis feeble in the upper extremities, strong in the lower. No external marks of violence.

The left pleural sac was full of blood (about 3 pounds in large clots of different sizes and about 2 pints in a fluid state).

The left lung weighed 10 ounces. It was shrunken and adherent to the chest wall, but not firmly so.

At the apex posteriorly there was a laceration 2 inches long and $\frac{1}{4}$ inch deep. The portion of lung round the rupture was deeply congested and softened, looking dark-red on section.

The right lung was also slightly adherent. It was congested and weighed 14 ounces. At the base was a bifurcated rupture $1\frac{1}{2}$ inches long and $\frac{1}{4}$ inch deep. Here, too, the lung surrounding the rupture was deeply congested.

The right pleural sac contained about a pint of sanguineous fluid and some blood clots.

The heart was healthy, the cavities on both sides were empty.

The liver weighed 50 ounces. Healthy. The spleen was slightly enlarged from malaria, weight 11 oz.

The stomach was healthy and full of half digested food. The intestines were healthy.

There was a large hæmatoma of the right tunica vaginalis and a hydrocele on the left side.

There was no fracture of ribs or injury of any of the bones.

So much for the facts discovered at the *post-mortem*. How can these conditions be accounted for? In the first case there are at least two possibilities. There was a history of bronchitis, and pleuritic adhesions were found, so probably the lung was bound down firmly. Then, under the violent respiratory efforts required to carry a heavy load up the hill, these adhesions were dragged on, and the lung, being diseased, gave way. Taking this view, the condition of the heart and of the right lung must be put down to mechanical causes, that the primary hæmorrhage was caused by the tear in the lung, and that the blood in the other lung was simply an overflow from the one that was torn.

Another possibility is that there was sudden failure of the right heart with intense congestion of both lungs and rupture of one of them into the pleural cavity, or, as an alternative, that a simultaneous rupture and cardiac failure occurred. The most natural explanation at first sight is that of cardiac failure, or cardiac failure plus rupture, but the symptoms, both *ante* and *post-mortem*, are rather against this view.

The patient's account of the tearing pain was very definite, and the symptoms of thirst and restlessness point to a steady hæmorrhage. Then *post-mortem*, on the other hand, the right heart was dilated and full, and both lungs were very much heavier than normal, while the cerebral vessels were engorged. Altogether it is far from easy to find at all a satisfactory explanation.

In the second case the *post-mortem* appearances were widely different. It is noted that the lungs were of normal or less than normal weight, and the heart was empty. The whole report is much more suggestive of a sudden death from hæmorrhage.

But why did this patient have a rupture of each lung with all this bleeding into his pleural cavities? He was not in evident bad health, and he had partaken heartily of his evening meal shortly before his death.

The story, that he suddenly felt faint and collapsed, may be true, or may be only part of the truth, but on a searching investigation the police were unable to elicit any further fact.

I cannot find particulars of similar cases in any books at my disposal. Treves* and Guy and Ferriet† do not refer to an idiopathic rupture of the lung. Saussier, quoted by Finlay,‡ gives hæmothorax as the cause of pneumothorax in one case out of one hundred and thirty-one, but this paper treats almost entirely of pneumothorax and does not mention intra-pleural hæmorrhage as ever occurring in that disease.

The cases above described are at least uncommon, and, from a medico-legal point of view, of some importance.

I am indebted to Assistant-Surgeons Dutta and Sanyal for the notes of these cases.

NOTES ON THE MERCURIAL TREATMENT OF CHRONIC DYSENTERY, CHOLERA AND LIVER COMPLAINTS

By HEMOHANDRA SEN, M.D. (CAL.),

Teacher of Materia Medica and Therapeutics, Campbell Medical School

In the Campbell Hospital I have been observing the effects of *Hydriargyri Sulphidum Nigrum* and of *Hydriargyri Sulphidum Rubrum* in cases of chronic dysentery and chronic liver complaints for over two years.

Hydriargyri Sulphidum Nigrum is prepared by rubbing together equal parts of mercury and sulphur.

When this chemical compound is heated just to allow the sulphur to melt, the fused mass becomes superior to the black sulphide noted above in its therapeutic value.

The red sulphide is formed by fusing and subliming mercury and sulphur. These two pre-

parations are considered by European writers as inert, because they are insoluble in water.

From my personal observations I can assure the profession that the above sulphides, though apparently insoluble, are extremely efficacious in liver complaints, such as commencing cirrhosis of the liver, chronic dysentery and similar other allied diseases such as chronic diarrhoea where the stools are deficient in bile.

I generally use these preparations thoroughly triturated in 5 to 15 grain doses twice a day.

The most important precaution to be observed by the patients is that they have to give up salt and water altogether, otherwise this treatment fails. The result is marvellous.

In those cases where the medicine was administered in the very last stage of sloughing dysentery I have invariably noted golden yellow bile in the upper part of the intestines and in the gall bladder. It is a well-established fact that bile secretion is essential in the treatment of dysentery and other bowel complaints including even cholera.

Apparently the 'insoluble' things are not always inert as people are liable to think. Take for instance calomel. Apparently it is insoluble. No one, however, thinks that calomel is not absorbed owing to its apparent insolubility. Some say it is partially converted into corrosive sublimate. This is only imagination, for calomel in poisonous doses does not produce corrosive effects though it causes salivation. Whatever the *modus operandi* may be, there is no doubt that calomel produces constitutional effects. What is true of calomel is also true of the above-named sulphides of mercury. I have used the black sulphide in superficial indolent ulcers with highly satisfactory results. One may think that these stimulate indolent ulcers mechanically and thereby stimulate healthy granulation process.

Whatever the mode of entrance may be, clinical observations lead me to think that the sulphides of mercury are direct cholagogues, and that they have no equal in chronic dysentery even of the sloughing type.

The precaution of stopping salt and water must be strictly carried out.

I bring this to the notice of the profession so that they may publish their unbiased opinion about their uses.

I have cured very obstinate cases of dysentery, cirrhosis of the liver with accumulation of fluid in the peritoneal cavity and obstinate cases of dyspepsia and chronic diarrhoea with these sulphides. Though these are far inferior to the soluble preparations of mercury, they are decidedly efficacious, and they have one great advantage, namely, that they never produce mercurial poisoning.

I know that a large quantity of this insoluble powder passes out of the system as such. They

* Treves. System of Surgery, Vol II, p 417

† Guy and Ferriet. Forensic Medicine, p 379

‡ Allbutt. System of Medicine, Vol V, p 378

produce a sepsis in the large intestine owing to their slow absorption like salol and beta-naphthol, and owing to their stimulating the liver to secrete golden yellow bile.

I have used other preparations of mercury like corrosive sublimate, calomel, grey powder, blue pill, &c, in dysentery with or without small doses of ipecacuanha. I am convinced that whatever medicine does good in dysentery *must start the normal bile secretion*. I have repeatedly verified this observation clinically and in the *post-mortem* room. I am of opinion that calomel, which is described by all the authorities as an indirect cholagogue, is a **DIRECT CHOLAGOGUE IN SMALL DOSES**.

Of all the remedies I think calomel in small doses is very efficacious in cholera. The first sign of a favourable turn in cholera is the appearance of bile in the stools. This cholagogue property of calomel in cholera and dysentery cannot be owing to its being an indirect cholagogue, for in these diseases hardly any bile remains stored up in the portal venous system, gall bladder or intestines. Moreover the yellow bile which we see in choleraic and dysenteric stools at the time of convalescence is distinctly fresh. Dr Rutherford's experiments on dogs show that calomel actually diminishes bile secretion, but the copious bile in the stools is the result of hurrying down of the already secreted bile owing to its stimulating action on the intestine. Clinically in the treatment of cholera and dysentery, I have noted the direct cholagogue effect of calomel. Dr Rutherford's experiments show that calomel is an indirect cholagogue, and that calomel actually diminishes bile secretion. This experiment is true when we administer calomel in purgative doses, but the effect of minute doses of calomel on the liver is to increase actual secretion of bile. I have vast opportunity of seeing the effects of drugs in human beings, both clinically and in the *post-mortem* room, when the patient dies suddenly from some other cause not likely to prevent studying the effect of calomel on the bile secretion.

There are many men who use calomel in large doses for the treatment of cholera. I think half a grain or quarter grain of calomel, or even less, often succeeds in giving cholera a favourable turn. The big doses of calomel produce salivation after convalescence. Everybody knows that at the evacuation stage of cholera hardly anything is absorbed from the gastro-intestinal tract. Whatever is done by the administration, say of ten grains of calomel, is achieved by a very small quantity which actually reaches the liver. The rest of the calomel, if not thrown out with the faecal matter, is sure to produce salivation. Very minute doses of calomel give a favourable turn to cholera by checking vomiting and bringing on secretion of bile and of other digestive fluids. The unutilised part

of the big dose of calomel is absorbed in the convalescence stage and makes the poor patient suffer from calomel poisoning. This direct cholagogue effect of calomel in small doses is a very important clinical phenomenon. It is high time that able men should work it out thoroughly and put down the result of experiments with minute doses of calomel. As regards the sulphides, I think physicians should not neglect them for, like myself, every one does experience the futility of commonly used drugs in the treatment of chronic dysentery.

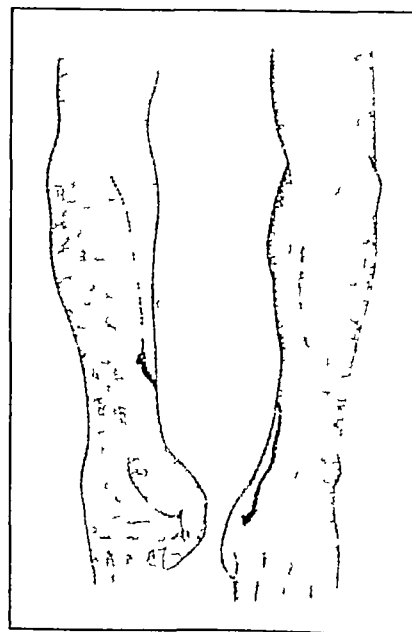
Anatomical Notes

NOTE ON AN ABNORMALITY OF THE RADIAL ARTERY

By GODFREY CHARLES

LIEUTENANT, I.M.S.

A RIFLEMAN was admitted into hospital one day lately, suffering from fever. On attempting to feel his pulse, no trace of a radial artery could be detected in the usual position at the left wrist, while closer examination disclosed the presence of a large pulsating vessel situated very superficially, running along the extreme outer margin of the forearm and turning over to the back of the wrist. Emerging from between the forearm muscles at a point $2\frac{5}{8}$ inches above the tip of the styloid process of the radius, and in the line of the normal radial artery, it passed downwards and outwards curv-



Front Back
Left Forearm

ing round the outer border of the forearm $1\frac{3}{8}$ inches lower down, and descended along the back

of the wrist to the upper end of the space between the first and second metacarpal bones, where it disappeared. In its course it was superficial to the Supinator Longus, Ext Ossis Metacarpi Pollicis, and Ext Brev Pollicis successively, and at its termination close to the outer border of the tendon of the Ext Longus Pollicis. The ulnar artery presented nothing abnormal, neither was there any sign of an enlarged Anterior Interosseous. The right arm presented nothing noteworthy. None of the deviations from normal of the radial artery usually described appear to coincide exactly with this case. The variety most akin to this seems to be that mentioned by Quain, p 451, who says, speaking of the radial, "in rarer cases, it has been seen passing backwards over the Supinator Longus, above the middle of the forearm, and descending across the thumb muscles to the wrist. These cases are analogous, save in the relation the point of crossing the Long Supinator has to the centre of the forearm, Quain's cases being above, and this one considerably below, that spot. Apart from its anatomical interest this case seems to be of some surgical importance as the exposed position of this artery renders it peculiarly liable to injury in connection with any superficial wound viewed in the vicinity, an accident which might have serious, even fatal results.

[The radial artery may run a superficial course, it may pass to the back of the wrist across the Supinator Longus, and may lie upon, instead of beneath, the extensor tendons of the thumb. Condensed from Cunningham's Anatomy, 1902, p 902—Ed, *I M G*]

CASE OF MECKEL'S DIVERTICULUM

By D M MOIR, M A, M D,

MAJOR, I M S

A HINDU male under-trial prisoner, 64 years of age, died in the Hughli jail from the effects of anchylostomiasis. On making the *post-mortem* a good example of the diverticulum ilei, or persistent part of the vitelline duct, connecting the embryonic intestine with the yolk sac, was found. The diverticulum measured 4 inches in length and $2\frac{1}{2}$ inches in circumference. It had a short mesentery, its extremity was free, and it jutted out at right angles to the free edge of the gut about two feet above the ileo-cæcal valve.

Although this is not a rare abnormality, I can find only one case recorded in the columns of the *I M G* since 1892. This instance was reported by Major J H Tall Walsh, I M S, in the *I M G* for July, 1893, at p 250. The diverticulum was $3\frac{3}{4}$ inches long, 1 inch in diameter, with a free extremity. It was at right angles to the bowel,

and was situated near the commencement of the ileum.

Investigation as to the frequency of Meckel's diverticulum has proved that it occurred in 22 per cent of bodies specially examined for its existence, *ie*, in 73 out of 3,302 subjects. In 59 of these 73 cases the average distance of the diverticulum from the ileo-cæcal valve was $32\frac{1}{2}$ inches, and in 52 cases its average length was 21 inches*.

Kelynack,† in the Pathological department of the Manchester Royal Infirmary, found 18 examples of Meckel's diverticulum amongst 1,446 subjects, *ie*, 1 in 80, or not quite 1 per cent. The average distance from the ileo-cæcal valve was $34\frac{1}{2}$ inches, the average length was nearly $2\frac{1}{4}$ inches, in all cases the diverticulum communicated with the ileum, and, generally speaking, it was at right angles to the bowel, and on the side opposite the mesentery.

There is a great variety in the characters of Meckel's diverticulum. It may be a mere nipple-shaped projection from the ileum, or it may be a tube $6\frac{1}{2}$ inches long and of nearly the same calibre as the bowel, its distal extremity may be patent at the umbilicus, or it may be closed and free, or fixed, in the abdomen, the free extremity may be single, bifid, bulbous, pyriform, or club-shaped with secondary lateral dilatations, the proximal end may be a tube terminating in a coil, which may be free or fixed, or the whole structure may be cord-like throughout, with no lumen, it may be adherent to the umbilicus, to the mesentery, to the transverse mesocolon, or to any of the abdominal contents. It may be found in the contents of a hernial sac, as recorded by Mr Banks,‡ of Liverpool, and by Professor Annandale, of Edinburgh§.

Although Kelynack makes a point of mentioning that in none of the 1,446 cases examined by him was the diverticulum in any way connected with the cause of death, yet serious or fatal consequences occasionally occur which are directly due to the presence of this embryonic remnant. It may cause obstruction, strangulation, gangrene, perforation and peritonitis, intussusception or volvulus, as cases described in the following references demonstrate—

British Medical Journal, 16th November 1895, p 1234, and 4th December 1897, p 1637.

The Lancet, 1898, 22nd January, p 227, and 28th May, p 1465, 1900, 10th February, p 383, 17th February, p 452, 10th March, p 707, 14th April, p 1068, and 2nd June, p 1585, 1901, 31st August, p 594, and 19th October, p 1047, and 4th April, 1903, at p 961.

* Professor Birmingham in Cunningham's *Anatomy*, 1902, p 1022.

† *B M J*, 21st August, 1897, p 459.

‡ *Lancet*, 15th February 1896, p 424.

§ *Lancet*, 12th March 1898, p 725.

THE
Indian Medical Gazette
 JULY, 1903

ANNUAL REPORT OF THE SANITARY
 COMMISSIONER WITH THE GOVERN-
 MENT OF INDIA, 1901

THE salient features of this report are enteric fever, plague, the census, and the work of special sanitary officers. The year 1901 was neither a cholera year nor a small-pox year, because the cholera mortality all over India was reduced by over 67 per cent from that of the preceding year, and the mortality ratio for small-pox was the same as in the year previous, which is below the quinquennial average. On the other hand, there was a great increase in plague mortality, over 67 per cent, which was distributed over the principal provinces of India, with their Native States.

Although the tendency is to acknowledge that man and the rat are reciprocally infective, yet observers differ as to the relative degree and priority in time of this mutual power of infection. Some go as far as to insist that plague is primarily a rat disease, and that for the spread of plague rats are just as necessary as water is for the spread of cholera. Considerable doubt is thrown on the theory that fleas convey plague from rats to man, though there is much to be said for the view that the cycle of infection is the rat, the soil, and lastly man.

There was a general increase in the prevalence of plague throughout Bengal, which was most severely felt in Calcutta, in the greater part of the Patna Division, in Monghyr and in Hazaribagh. In Gya the people readily resorted to inoculation owing to the force of example, in Saran the people were agreeable to evacuation of dwellings, but averse to disinfection. In the United Provinces plague was prevalent in the districts of Benares, Ballia, Allahabad and Jaunpur. The disease broke out almost simultaneously in Benares and Ballia, and in the case of the latter the contagion appears to have been conveyed from the district of Saran in Bengal. The tremendous increase of plague mortality in the Punjab was ascribed to the relaxation of all compulsory measures. Plague was most fatal in the Jullundur, Hoshiarpur, Gurdaspur and Sialkot districts. From the two latter the

disease spread to Jammu in Kashmir. In the Madras Presidency, the towns of Vaniyambadi, Bellary and Ambur suffered most, Bellary was infected from the Bombay Presidency, and the other places from Mysore Territory.

In the Bombay Presidency the mortality from plague was the highest recorded since the first appearance of the disease in 1896, and about three times as many towns and villages were affected in 1901 than was the case in the year before. In Bombay city plague occurred throughout the year, reaching its maximum in March as was the case in Calcutta also.

In the European Army there were only three cases of plague, with one death, in the Native Army there were 70 cases, with 41 deaths, whilst in the jails of India there were 50 cases with 36 deaths. Amongst Native troops the regiments which suffered most were the 15th Madras Infantry at Belgaum and the 1st Madras Lancers at Bellary. At the former place only three cases occurred in the regiment after reinoculation, some of the men for the third time. At the latter station no inoculated men were attacked. In the Patna Jail there were 18 cases, the first of which occurred in a prisoner within a few hours of his admission on the 1st February. He died on the 6th February, rats were found dead inside and outside the Jail on the 28th February and succeeding days and other prisoners were attacked on the 4th March. In the Bombay House of Correction the outbreak of plague amongst the prisoners was also preceded by a large mortality amongst the rats.

A MEDICAL DIRECTORY FOR BENGAL

INDIA is the happy hunting-ground of the medical quack, since all and sundry may practise medicine, surgery and midwifery without let or hindrance from the law. We have known of an Indian with no medical qualification practising amongst Europeans, who recovered his fees in a Court of Law even after the facts of the case were made manifest. Under such circumstances it behoves *bonâ fide* duly qualified medical practitioners to help themselves, and the Inspector-General of Civil Hospitals, Bengal, has given them a most excellent lead by publishing a *List of Qualified Medical Practitioners in Bengal*. The issue for 1903 is now before us, and gives evidence of the immense amount of self-imposed labour which such a task involves. It is the duty

of every qualified medical practitioner to assist in this good work. He can do so by sending in his name, with full particulars as to qualifications, date of obtaining them, residence and any appointments he may hold, either to the Calcutta office of the Inspector-General of Civil Hospitals, or to the Civil Surgeon of the district in which he resides. Moreover, he should communicate annually on the 1st April, intimating any change of address or addition of any new qualifications, because the names of persons of whom nothing has been heard for five years must be struck off the list.

The term "list" is almost too modest for what may be regarded as a Provincial Medical Directory. Its utility and convenience are not merely confined to civil surgeons and Government officials, because it might with advantage be freely used by large mercantile firms and companies who have to appoint medical practitioners to tea gardens, mills and factories. It would help railway companies in the selection of their medical subordinates, and also in sifting the numbers of bogus medical certificates presented by their employes to account for their absence from duty. We know of one railway on which there was a decided lack of originality in the concoction of such certificates, because the absence of a large number of employes used to be attributed at all seasons to a sudden attack of cholera. This continued until the Consulting Medical Officer pointed out the astonishing percentage of rapid recoveries from this deadly disease.

This publication should be of great use to the medical officers of the Government with reference to a great many medical certificates which are presented for countersignature, not a few of which are written by compounders, clerks, karnajes, *et hoc genus omne*. We recollect getting a medical certificate to countersign, which was written on the gilded and crested paper of a raja, and which purported to be the medical opinion of a person bearing the qualifications of M.D. and LL.D., yet the calligraphy, composition and medical opinion were evidently the handiwork of an illiterate and ignorant individual unacquainted with medicine. Needless to state that inquiry proved the fraud of the *sor-disant* learned man.

The book is of a handy size, and the general arrangement is very convenient. The information supplied about each person is the name, rank,

titles, professional qualifications, authority for granting them and date of grant, place, residence and official appointments. Part I contains the names of practitioners who have qualified in Europe and who reside in Bengal. It is divided into a section for Government medical officers and a section for private practitioners. Part II comprises the names of persons who have qualified in India, and is divided into a section for Military and Civil Assistant-Surgeons, and Civil Hospital Assistants, and a section for private practitioners. Part III gives the names of official and non-official practitioners arranged alphabetically according to their districts. Part IV is an alphabetical index sub-divided into sections for European and for Oriental names.

THE BENGAL BRANCH OF THE COUNTESS OF DUFFERIN'S FUND

THE Seventeenth Annual Report of the Bengal Branch of the Countess of Dufferin's Fund for the year 1902 does not reveal a satisfactory state of affairs. In the words of the Treasurer, the outlook is most anxious. "We failed to re-invest Rs. 4,200 repaid by the Novada Estate and also exceeded our income, after allowing for realisable assets, to the extent of Rs. 3,388. In all we thus consumed capital to the amount of about Rs. 7,588, of which fully Rs. 5,000 went on current expenses. This is not quite so bad as last year, but the balance sheet is much awry, and the fund is threatened with serious results if the present relation of expenditure to receipts continues."

The remedy suggested by the Treasurer is that the money expended on Dufferin Hospitals should be confined strictly to medical purposes, that the class of patients for whom these hospitals are intended, the genuine *pari-da-nishin* women, can quite well afford to pay for their food and that they would not object to do so. In other words, well-to-do persons are being pauperised by eleemosynary relief quite unnecessarily.

But the Report clearly shows that a very great deal of the work credited to the Dufferin scheme is amongst women that can in no sense be classed as *pari-da-nishins*, and that many of the so-called Dufferin Hospitals are simply female wards in the chief general hospital of a town or district, under the charge of the Civil Surgeon, supported by local funds and in no

way indebted for pecuniary support to the Dufferin Fund

To take a concrete instance, we know of a case in which a District Board secured the services of a lady doctor on their own initiative some twelve to fifteen years ago. They paid her salary, house-rent and carriage allowance. She was given a ward and an out-patients' room in the municipal dispensary. Subsequently a new general hospital was built, the women and children were transferred to the new building and occupied a ward originally constructed for male surgical cases. From first to last all expenditure on the treatment of women and children has been paid out of local funds, and the local bodies who support the hospital have made their own arrangements for a lady doctor or a female hospital assistant.

The table of receipts and expenditure in this Report contains no reference to this hospital, yet for years the returns of women and children treated as in-door and out-door patients, and for operations performed, have been incorporated with those of genuine Dufferin Hospitals, and have gone to swell the sum of the annual work performed under the auspices of this scheme. During these years much good work has been performed on the sick women and children in this hospital by the various Civil Surgeons who have been in medical charge, which work appears as that of the Dufferin Hospitals. Yet, beyond the interest and experience of gynæcological and pædiatric cases, and the satisfaction of good work done, the Civil Surgeon's only recompense seems to be that he has to submit two sets of annual reports and returns, one series for the 30th November for the statistics of the Dufferin Fund, and the other series for the 31st December in the ordinary routine to the Inspector-General of Civil Hospitals.

The Lady Superintendent of the Lady Dufferin Victoria Hospital, Calcutta, also complains about the submission of duplicate annual reports. She begs that "this year, if possible, a special effort be made to relieve us of the quite unnecessary waste of time in sending in a double report, to both the Dufferin Association and to Government. You will see that our work is much increasing both in quality and quantity, and it is impossible to keep pace with it unless we are relieved of this office work, due to an obsolete custom of having a meeting in Calcutta in the

cold weather, for which statistics were wanted." Surely this is an instance which might appropriately be dealt with under the policy of His Excellency the Viceroy for reducing the number and extent of the reports and returns annually submitted. It is quite feasible to have only one set of reports and returns for the 31st December, a copy of which might, if necessary, be submitted to the Secretary of the Dufferin Fund.

A glance at the Report under review shows that there are many hospitals for women and children in Lower Bengal, ostensibly under the Dufferin Fund, which appear to be very much in the position of the example we have described, *i.e.*, that the women and children are treated in general hospitals or dispensaries (maintained locally) by the Civil Surgeons assisted by lady doctors, female hospital assistants or dhais. We gather this to be the case at Balasore, Bankipore, Berhampore, Burdwan, Chittagong, Chapia, Cuttack, Mitford Hospital at Dacca, Faridpur, General Hospital at Gaya, Hazaribagh, Hooghly, Krishnagar, Midnapore, Muishidabad, Pabna, Palamau, Puri, Rampur, Beaulah and Suri.

Here, then, in a score of instances, and there may be others, the work done in general hospitals in the districts is simply incorporated with that done in special Dufferin Hospitals and classed as the latter. Thus it would seem to appear that in Lower Bengal a large number of the women and children medically treated by Government officials are regarded as relief afforded by the Dufferin Fund.

Calcutta subscriptions, including a refund of municipal taxes, amounted to Rs 4,375, and the mufassal subscriptions came to Rs 963, much of which was obtained from the neighbourhood of Calcutta. The capital of the Bengal Fund is to a large extent derived from donors whose estates are not in Calcutta. The expenditure of the Fund is almost wholly confined to Calcutta, because it is considered that more useful and practical work is thus obtained than if the funds were distributed amongst mufassal institutions. The expenditure on the Lady Dufferin Victoria Hospital and Native Christian Annexe, Calcutta, amounted to Rs 24,081 and Rs 7,643 respectively. This apportionment of funds appears justified by the results of these institutions, since there was an increase of 1,500 patients.

LONDON LETTER

TIME FLIES

TEN years have elapsed since I wrote the first of this series of letters, which bears the date 5th May 1893. Since then I have not omitted a single month, and the sum total of my contributions therefore amounts to 120, and as each letter covers about a page and-a-half, I have monopolised some 180 pages, equal to about five of your numbers. Whether I ought to apologise to your readers for occupying so much of your valuable space with my maanderings or to congratulate myself on the opportunity thus afforded me of prolonging my literary and professional life, I am not quite certain. Of this, however, I feel fully assured that the *Indian Medical Gazette* has one way or other afforded me one of the greatest pleasures of my existence. The first number was handed to me by Surgeon-Major Thomas Fairclough, Lord Lawrence's doctor shortly after my arrival in India in January 1866, and I have taken a deep interest in the journal ever since then.

One of my most precious possessions is a complete file of the *Indian Medical Gazette*, and the preparation of the monthly issue constituted for twenty-two years a most refreshing interlude from the strain and worry and harass of Calcutta work. The journal has had its vicissitudes, and more than once very nearly came to grief through causes unconnected with its merits. That it has completed an existence of over 37 years, and is now going stronger than ever, is a matter of note and thankfulness. In India "change and decay" are apt to be specially rampant—evident in external nature, in institutions, political and social, in human life, and particularly evident in literary and scientific enterprises. Curiously enough in the midst of these disintegrating forces there are evidences of a *vis inertiae* which militates against alteration. The two things are perhaps not inconsistent. Let us flatter ourselves with the belief that the long life of the *Indian Medical Gazette* has been the product of a *vis viva*, and an energy actively and continuously exercised to meet a real and abiding claim, namely, a desire for professional information and progress, and let us hope that this want will continue and grow and always meet with a worthy response.

THE SEVENTY-FIRST ANNUAL MEETING OF THE
BRITISH MEDICAL ASSOCIATION

This will be held at Swansea on Tuesday, Wednesday, Thursday and Friday, the 28th, 29th, 30th and 31st July. The meeting will be memorable by reason of the circumstance that the new constitution of the Association will be for the first time placed on trial. It will be interesting to watch how it works. At one time it seemed as if the section for tropical diseases, which has for several years been a source of enjoyment and profit to Indian and Colonial medical men, were to be omitted. Better counsels however prevailed, and this section has been fully organised and promises to do good work. Dr George H. T. Nuttall, of Cambridge, whose researches regarding the agency of insects in the communication of infectious diseases are so well known, has been selected as President, and Sir Francis Lovell, C.M.G., and Staff Surgeon Percy William Bassett-Smith, R.N., as Vice-Presidents. The Honorary Secretaries are Dr G. C. Low, of the London School of Tropical Medicine, and Captain Leonard Rogers, of the Indian Medical Service.

These subjects have been selected for discussion, namely (1) the disposal of excreta in the tropics, (2) trypanosomiasis, and (3) leprosy. Dr W. J. Simpson will open the first discussion, Dr Patrick Manson the second, and probably Mr Jonathan Hutchinson the third. No list of papers has as yet appeared, but there is every reason to believe that the proceedings of the section will be lively and interesting.

TRYPANOSOMIASIS

In a previous letter, I noted the discovery of a trypanosoma in the blood of man. This has been followed by several similar finds. The recently published edition of Manson's "Tropical Diseases," which is a most admirable and up-to-date production, has a good précis of information on this subject, and the meeting of the tropical section at Swansea will, no doubt, contribute important additions to our knowledge. Dr Castellani, who has been investigating the sleeping sickness of Uganda, has made a statement that he has found trypanosomes in 70 per cent of cases of that disease examined by him. He also found the diplococcus of the Portuguese Commission in these cases, and the question arises to which of these organisms the disease is due. Lieutenant-Colonel Bruce, of the R. A. M. C.,

is at present engaged in investigating the sleeping sickness, and important facts bearing on pathology and causation may be looked for shortly

LEPROSY

Mr Johnathan Hutchinson has returned from his Indian tour, and is losing no time in communicating the results thereof. He recently read a paper on the subject at a meeting held at the Polyclinic, at which Lord George Hamilton presided. He contended that his Indian investigations had furnished strong support to his theory of the causation of the disease by decomposing, dried or imperfectly salted fish. Sir William Broadbent, who proposed a vote of thanks to the lecturer, avowed himself to be in favour of this theory. Mr Hutchinson is to read a paper at the Epidemiological Society of London on the 26th of May on the same subject, and will then, no doubt, parade the same doctrines and data, and there will probably be a third exposition of his views at Swansea. If indefatigable industry, strong conviction and confident, reiterated assertion are competent to settle a question of this nature, Mr Hutchinson should establish his hypothesis, but I for one entertain very strong doubts regarding its soundness. That tainted fish may be a means and medium of communicating the infection of leprosy is possible, but that it is the sole or principal means is questionable in the highest degree. Mr Hutchinson himself admits that it is not the sole means, and allows that the contagium may be conveyed by other contaminated articles of food. He postulates, however, for the intestinal tract the privilege of being the sole portal of entrance. The respiratory and cutaneous tracts present other possible avenues of entrance, and in the present state of our knowledge it seems unwise to dogmatise in favour of any one of the three. Indeed, facts are more and more indicating the importance of the skin, broken and unbroken, as the channel of infection in many infectious diseases, and Sticker has furnished strong grounds for the belief that in leprosy the respiratory mucous membrane is the vulnerable tissue. It seems wise therefore to suspend judgment regarding Mr Hutchinson's dogmas however positive and plausible. I doubt very much whether in his Indian researches he has sufficiently discounted the value of oral testimony. I see that he has been cross-examining lepers regarding their food habits. If in matters

of this sort the European questioner is sufficiently insistent, he will obtain any evidence which he desires to extract from the class of natives who become inmates of leper asylums

K McL

20th May 1903

Current Topics.

SPECIAL NUMBERS

It is proposed to publish a special number in November on Diseases of the Liver and Gall-Bladder, as discussed from the point of view of either the surgeon, the physician, or the pathologist. Contributions for this number should reach Calcutta before the 1st October 1903.

It is proposed to publish a special number on Cholera next December. Contributions for this number should reach Calcutta before the 1st November 1903.

NEW HOSPITAL IN BOMBAY

It is reported that a new hospital for women is to be constructed in the compound of St George's Hospital, Bombay, at a cost of about five lakhs. There will be special wards in addition to accommodation for sixty patients in the ordinary wards. There will be many modern conveniences introduced in order to bring the hospital up-to-date with European hospitals.

VENEREAL DISEASE IN THE ARMY

FROM the *Annual Report of the Sanitary Commissioner with the Government of India for 1901*, we learn that, amongst British troops, there was some improvement in the admission rate for venereal diseases,—276.0 per mille against 298.1 and 313.4 in the two preceding years. Still this means a very considerable loss to the State when we consider that it involves a total loss of service of 516,855 days, or, to put it in another way, there were 1,416.04 men constantly on the sick list from the effects of venereal disease, and the average stay in hospital of each of these men was 30.79 days. Owing to the same causes there were eight deaths and 683 invalidings.

The admission rate for venereal diseases amongst Native troops was only 34 per mille, as compared with 276 amongst British troops. There were eight deaths and 128 invalidings directly due to this group of diseases. As usual the Gurkhas suffered in particular. Raipur and Saibalpur were amongst the worst places for venereal diseases, and the abandonment of both places military stations has been sanctioned.

SCURVY IN THE ARMY

THERE were 391 admissions for scurvy in the Native Army during 1901, 47 per cent being in the Bombay Command and 36 per cent in the Punjab Command. There were 78 cases amongst the 23rd Bombay Infantry, and 18 cases in the 20th Bombay Infantry at Alipore.

SUICIDE AMONGST BRITISH TROOPS IN INDIA

THERE were 194 suicides in the decennium 1891—1901, or about 19 per annum. There were fourteen cases in 1901, of which ten were due to gunshot, three to cut-throat, and one to drowning.

THE DISCOVERER OF SALICIN

The death of Dr Thomas John MacLagan has recently served to remind a medical world so largely occupied with serums, toxins, antitoxins and bacteria that he was the discoverer of salicin and the originator of the modern treatment of acute rheumatism, who thus conferred an immense boon on sufferers from a most painful affection with such far-reaching sequelæ in heart and joint affections. Though an alumnus of Edinburgh University, and possessor of its M.D. degree, and also an M.R.C.P. of London, yet we are unaware that either his university or the College of Physicians ever sufficiently recognised his works. For several years he was a medical practitioner in Dundee, where he made his discovery. In 1874 he first used salicin in the treatment of acute rheumatism, and he first published his observations in 1876. Dr MacLagan applied his treatment most successfully in the case of the Earl of Southesk, which led to his transfer to London, and this in turn led to his being appointed Physician to the Prince and Princess of Schleswig-Holstein.

To those who may be interested in the chain of reasoning which caused him to adopt the use of the salicyl compounds we recommend his thoughtful and suggestive book on *Rheumatism, its nature, its pathology and its successful treatment*. He argued that ague is of miasmatic origin, the poison is a minute parasitic organism which is affected by quinine, and quinine cures ague. The trees which provide quinine grow best in the countries and localities where malarial fevers are most prevalent.

Similarly rheumatism is commonest in the damp, low lying localities of a temperate climate, such being also the conditions in which the *Spiceæ* and the *Salicaceæ* thrive best. His first experiments were made with an oil and tincture derived from the *Spiceæ ulmaria*, or common meadow sweet, which he found to contain salicylic acid and to cure acute rheumatism. Difficulties in administration made him turn to the bark of various species of willow or *Salix*, in which he discovered the bitter principle

salicin, the administration of which he found to have such marvellously good results.

THE ROBERT HARVEY MEMORIAL FUND

Subscriptions have been received from Major J. B. Jameson, I.M.S., Rajkote, Kathiawar, Rs. 16, Major K. Prasad, Shwebo, Upper Burma, Rs. 16. A remittance of £100 has been sent to the artist, Mr. Melton Fisher, London. The credit balance in the bank amounts to Rs. 1,442. This leaves still nearly Rs. 450 to be obtained. Subscriptions should be sent to *The Treasurer, R. Harvey Memorial Fund, c/o Messrs. Thacker, Spink & Co., 5, Government Place, Calcutta.*

It has been arranged to have two portraits of the late Surgeon-General R. Harvey, C.B., D.S.O., I.M.S., one for the United Service Club, Simla, and the other for the Eden Hospital, Calcutta.

BROMIDE OF ETHYL

Dr. Gallaher, of Denver City, recommends bromide of ethyl as a convenient and safe anæsthetic for short operations not lasting more than five minutes. It is given on a towel, or in an inhaler, with as little air as possible. It should be administered when the stomach is empty, as vomiting is apt to occur. It is said not to cause spasm of the glottis, and the patient almost at once regains his normal condition without unpleasant symptoms after consciousness returns. The danger lies in impure bromide of ethyl, or in bromide of ethylene being used by mistake, the latter being highly poisonous.

SOMNOFORM

The merits of somnoform as an anæsthetic agent in dental surgery are being extolled. It is composed of chloride of ethyl, chloride of methyl, and bromide of ethyl, in the proportions of 60, 35 and 5 respectively. Its advantages are said to be its portability, simplicity in administration, rapid action and elimination, quick return of consciousness, and safety.

SPECTACLED AMERICANS

DR. VALK of New York asks the question—“Is America a spectacled nation?” and answers it in the affirmative. The Germans have long been considered a spectacled nation, and Americans of the rising generation are not a whit behind them in this matter, but the Germans are chiefly myopic, while the Americans tend to hypermetropia with astigmatism. With the Germans it is attributed to their studious habits, their complex calligraphy, and still more intricate print. With the Americans it is supposed to be due to a congenital tendency to the hypermetropic form of eye, combined with eye-strain due to excessive reading and the strenuous life of modern competition. (*March, 1903, Charlotte Medical Journal*)

METHYL ALCOHOL POISONING

The atrocious smell and taste of wood alcohol can be largely eliminated by a process of refining, which permits of its sale as "Columbian Spirits," in making Bay Rum and cheap extracts. Dr. Hartsboun gives the following account of the symptoms—"From 4 to 24 hours after taking the poison there is dizziness, nausea and vomiting, dilated and sluggish iris, progressive blindness, pain and tenderness over eyes upon pressure or motion, semi-coma, and if death does not result in a few days there is a return of vision which is usually only transitory, relapsing in a few days again into total blindness * * *

The ophthalmoscopic signs are, in the early stages, dilated and tortuous retinal vessels and general retinal congestion, then in the later or atrophic stage there is a lessening of the calibre of the vessels, and a general paleness of the whole retina, with all the signs of atrophic retinitis. Where total blindness does not occur there is usually a central scotoma and a marked diminution in the field of vision" (*Charlotte Medical Journal, March 1903*)

DISPENSARY RETURNS OF THE PROVINCE OF ASSAM FOR 1902

Colonel C. W. Carr-Calhoun, M.D., I.M.S., as the Principal Medical Officer and Sanitary Commissioner throughout the year, submits the report. The dispensaries numbered 133, and treated 6,683 in-patients with a mortality of 11.04, or, excluding deaths amongst paupers and destitute coolies, many of whom were moribund cases, the death-rate was only 8.34.

The total number of patients treated has shown a marked increase year by year during the past four years, the figures being 623,803, 682,989, 734,682, and 821,331. In 1902 the out-patients alone numbered 814,648, or an increase of nearly 12 per cent over the year previous.

Skin diseases were numerically the most frequent; next in number were malarial fevers and *kala-azar*. Inoculation is freely practised in some districts, and is without question the cause of the prevalence and spread of small-pox, a fact which should induce the authorities to introduce the measures obtaining elsewhere in India to make the practice of inoculation illegal and subject to deterrent penalties. Surgery has made a considerable stride, inasmuch as the operations increased to 17,417 as against 15,689 in the previous year, and the total mortality was only 9, as compared with 27 in 1901 and 41 in 1900. It is remarkable that there were only 58 cataract operations—a figure which may point to the scarcity in the regional distribution of this affection.

It appears that the endeavours made to attract female patients, *eg*, separate consulting rooms with separate entrances, have not proved very successful. The hill women will not sleep in

the wards set apart for them, though they have no objection to the close proximity of males of their own race. Such types would hardly lend themselves to fit into the classification of the *parda-nishins* of the Dufferin scheme. The total income of the dispensaries was Rs 2,55,098, and the total expenditure Rs 2,03,678, leaving a balance of Rs 51,420. The average diet charge was only 2 annas 9 pies per head. These figures all point to a flourishing state of affairs in which efficiency and economy seem to go hand-in-hand.

LUNATIC ASYLUMS IN THE CENTRAL PROVINCES

There are two lunatic asylums in the Central Provinces, one at Nagpur with an average population of 186, and another at Jubbulpore with 182 inmates. It has been under consideration to abolish the Jubbulpore Asylum and to enlarge the Nagpur Asylum so as to raise it to the status of a central institution, but the scheme would prove costly, and the present buildings scarcely come up to modern asylum requirements. In addition to this there is said to be insufficient work for a whole-time alienist. Under these circumstances it is proposed to make suitable and sufficient accommodation for female patients at Nagpur, to construct an observation ward for European and Eurasian insanes, and to build a proper hospital.

In the Central Provinces, as elsewhere in India, there is the usual long-standing complaint of the defective character of the information supplied in regard to the previous history of lunatics sent to asylums. In spite of the various official forms and of the numerous questions printed on them the information supplied to the asylum superintendents is not infrequently meagre or of little value. It is worth considering whether it might not simplify matters to have the Magistrate's order, medical certificates, and previous history as supplied by the medical, jail or police authorities, all combined on the four sides of one sheet of foolscap.

It is satisfactory to learn it is now recognised that the pay of the warders (attendants as they are commonly called in British asylums) is insufficient. In the words of the resolution—"The work involves considerable responsibility, and it is vain to expect to get the services of men of the proper type on a rate of pay (Rs 6 a month) considerably below what has to be paid to menial servants in Nagpur and Jubbulpore."

BENGAL JAILS

The resolution on the Administration Report of the Bengal Jail Department for 1902 shows that the jail population has been steadily increasing of late years, so that the margin between the average number and the absolute capacity is small. Last year the daily average population

was 21,717, whereas the total available accommodation was for 23,527 prisoners. Since the health of prisoners is so intimately associated with the avoidance of overcrowding and with the maintenance of the regulation ground area per man, it is probable that considerable extensions will have to be made ere long. This is particularly the case with the accommodation for under-trial prisoners.

In 1902 the death-rate for the whole of Bengal was estimated at 33.43 per mille, whereas the jail mortality was only 25.4 per mille, which is the lowest on record in the past ten years with the exception of 1898 and 1899.

SUBORDINATE MEDICAL SERVICE PENSIONS

THE Government of India have recently succeeded in obtaining a pension of Rs 8-8 a month for the widow of the late Hospital Assistant Isaac Jacob, who had served with credit for thirty years, including two campaigns, and whose death was "directly due to his unremitting attention to the sick." Apparently this concession was obtained from the Secretary of State for India, only after a renewal of the recommendation. It appears that the Secretary of State for India is still of opinion that "it is important, as a rule, to maintain the distinction which has hitherto been recognised between the cases of medical officers dying of disease contracted in the discharge of their professional duties and the cases of non medical officers who fall victims to disease while on special duty outside the ordinary scope of their employment."

The capacity in which a servant of the State was employed at the time he succumbed to mortal illness or accident in the faithful discharge of his duties must be immaterial to his widow and orphans. The salient fact to them is that the bread-winner is dead, their natural protector has died at his post, and they naturally look to the State, his employer, for support. It is not their fault that the husband or father was a medical man, or that a State is under the necessity of employing medical officers. His Excellency the Viceroy and his Council have fortunately more generous sentiments on this point as may be gathered from the following paragraphs —

"We did not intend to imply that we thought the limitation a right and proper one, or that a pension should never be granted to the family of an officer who has died from disease contracted on some duty within the scope of his appointment. We are of opinion that a more liberal policy in this matter will stimulate subordinate officials to greater devotion to duty at a comparatively small cost to the Government. In order to maintain a high standard of discipline among subordinates of various departments, such as the medical, the police, the postal and telegraph, we are compelled to treat with severity all cases of desertion or neglect of duty

in times of epidemic disease, and we have frequently upheld, though with reluctance, orders of dismissal in cases where old and tried servants of Government have succumbed to the general panic and deserted their posts owing to a temporary loss of nerve. The argument used in these cases by heads of departments is that it is essential to make an example in order to deter others from similar acts of desertion.

"We have yielded to this argument as being unanswerable, but we think that the severity to which it leads might well be tempered with generosity in the converse cases where devotion to duty has cost a man his life. We can hardly expect a man with a family to run great risks if he knows that, in the event of his death, his wife and children will be left destitute, and that the Government, which he has served, will do nothing to help them. When a man faces the risks, and sets the good example which we consider to be necessary, and dies in doing so, we think that his dependants have a strong claim on the charity of Government."

It is gratifying to learn that permission has been obtained to raise the pension limit from Rs 10 up to Rs 25 per mensem, or a gratuity not exceeding the equivalent of that amount.

BURMA BRANCH OF THE COUNTESS OF DUFFERIN'S FUND

ACTING on the principle of *audi alteram partem*, and because we know nothing of the merits of the case beyond the statement of the Rangoon correspondent, we refrain from comment beyond expressing the hope that the present grievances or differences of a most excellent charity may be soon adjusted, so that work may go on harmoniously. The statement is printed in full, with the exception of the title which is injudicious, and the last sentence which is unnecessary —

THE DUFFERIN MATERNITY HOSPITAL, RANGOON

MEDICAL men, missionaries and others acquainted with Burma have abundantly proved the existence among the Burmese and neighbouring peoples of a cruel and barbarous system of midwifery entailing terrible mortality among mothers and infants. As an organized effort to deal with this evil Sir Charles Bernard, Chief Commissioner of Burma, called a meeting in October 1885 at Government House, Rangoon, at which it was proposed to establish in this Province a branch of the Countess of Dufferin's Fund.

The meeting was attended by a number of ladies and gentlemen, the latter chiefly members of the medical profession, and after careful deliberation it was decided to train Burmese women as midwives and sick-nurses, and to establish a Lying-in Hospital in Rangoon to provide them with opportunities for clinical instruction.

These proposals were subsequently heartily endorsed at a Public Meeting held in the Town Hall, Rangoon, which was attended by many representatives of both the European and Native Communities, and an influential committee was appointed to give effect to the resolutions of the meeting.

In answer to the appeals of this Committee the public by private subscription provided Rs 15,000 which was devoted to the establishment of a small Lying-in Hospital and Training Home for Burmese midwives which was opened in a rented building in April 1887.

This Institution was conducted with great efficiency, many patients were treated, and a good number of midwives trained. The Honorary Medical staff consisted of the three senior non-official doctors practising in Rangoon and the Junior Civil Surgeon, for the time being, the Senior Civil Surgeon acting as Consulting Physician. This staff, together with the lady resident doctors and the Managing Committees, worked harmoniously for thirteen years, the conditions attached to the Government grants-in-aid were more than fulfilled, and considerable sums were earned from paying patients for the support of the Hospital. A sum of Rs 50,000 was also earned for treatment of lying-in cases which formerly were sent to the Rangoon General Hospital. The Institution was conducted to the satisfaction of the Government and the general public which took a liberal interest in its welfare.

During thirteen years 1887-1900 the Burma Branch of the Countess of Dufferin's Fund by continuous exertion supported and managed the Institution, and laboriously raised funds for the erection of a new hospital which became necessary as the number of patients and pupils increased and the work grew. Much of the money required for the purpose was given in small sums by thousands of Burmans and Karens throughout the Province.

In 1899, on the completion of the new hospital, Sir Frederick Eyer, Lieutenant-Governor of Burma, compelled the Committee of the Burma Branch of the Countess of Dufferin's Fund to make changes in the management and personnel of the Institution, which the Committee believed would be, and which have since proved to be highly detrimental to its efficiency and usefulness.

During the last three years, 1899-1902, there has been continued interference with the management of the Institution. Under the orders of the Lieutenant-Governor, the Local Committee has been ignored, and changes have been made in defiance of its expressed wishes and in spite of strong disapproval of the subscribers and the general public of Rangoon, as evidenced by the proceedings of the Municipal Committee of Rangoon and a widely signed memorial to His Excellency the Viceroy.

These acts of unwarrantable interference lately culminated in the Maternity Hospital being transformed into a "General" Hospital into which many patients suffering from various diseases have been admitted to the great danger of the Lying-in Patients, and in the Institution being confiscated and placed under the entire control and management of a small clique of officials who took no part whatever in its establishment and maintenance, or in the erection of the new and beautiful building.

As a punishment for having conscientiously opposed the high-handed and unlawful interference of the Lieutenant-Governor, the non-official doctors on the staff have under his orders been expelled from their honorary appointments and, contrary to the expressed wishes of the Local Committee, the sole medical charge of the Institution has been placed in the hands of the Chief Civil Medical Officer of the Province and the two Civil Surgeons of Rangoon (the latter being already in exclusive charge of the Rangoon General Hospital with 461 beds), and this notwithstanding the fact that the non-official medical men of Rangoon have from the first taken a very active part in the establishment, conduct and management of this Lying-in Hospital, its very existence being greatly due to their exertions.

Towards the maintenance of this Hospital from its start in 1887 the benevolent public of Rangoon and the Province gave by private subscriptions the sum of Rs 61,000, and Rs 49,000 were earned from paying patients.

The cost of the new hospital as it now stands was Rs 109,000, of this sum the Government of Burma gave Rs 10,000, private individuals gave Rs 84,000. The Central Committee of the Countess of Dufferin's Fund in India gave Rs 10,000, and the Rangoon Municipal Committee of Rangoon Rs 2,000.

The Committee of the Burma Branch of the Countess of Dufferin's Fund which from the first has represented the subscribers to the Institution, consists of some sixty of the most influential and benevolent ladies and gentlemen of Rangoon, official and non-official, European and Asiatic. Sir Frederic Eyer is supposed to be its President and Patron, but *on no single occasion during the last two years has it been consulted with regard to any of the changes made in this hospital which it built, or in the disposal of the funds which it provided!*

"On the Physiological Action of the Poison of the Hydrophidæ" By Leonard Rogers, M.D., B.S. (Lond.), M.R.C.P., F.R.C.S., lately Officiating Professor of Pathology, Medical College, Calcutta. Communicated by Major A. Alcock, F.R.S. Received March 31,—Read May 7, 1903.

It has long been known that the great group of the Hydrophidæ, or Sea snakes, are poisonous, and cases of death produced by their bites have been

recorded, for example that in Sir Joseph Fayrer's work on the 'Poisonous Snakes of India,' of the ship's captain bitten while bathing in the Bay of Bengal, with a fatal result. The fishermen on this coast are also well aware of the danger of the bites of these reptiles, and take such good care to avoid them, that deaths among them are quite uncommon as far as I can ascertain. Deaths, however, not very rarely occur among those employed in oyster fisheries in shallow water in some places on the Madras coast, owing to snakes being trodden on, so that a study of the nature of the poison of this class of snakes has a practical as well as a scientific side, and, as far as I can gather from the literature of the obtainable in Calcutta, it has not yet received much attention. During the last year I have been investigating the subject, and although the amount of poison I have been able to obtain has been very small, yet it has sufficed to allow of certain definite results being obtained, which will be summarised in the following paper.

The Collection of the Poison

The Hydrophidæ are met with in large numbers all round the coasts of the Indian peninsula, and have been specially studied at Puri on the east coast in Orissa. It was at this place that I obtained my specimens, which are caught by the fishermen in their nets during the calm cold weather months with a frequency which is in proportion to the number of fish taken. By small payments they were induced to bring them to a tank which I had constructed near the beach, in which they usually only lived a few days, although some survived several weeks. By making them bite on a watch glass covered with a thin layer of gutta-percha tissue stretched tightly across it, they eject the poison into the glass as clear drops free from all saliva. This is then dried over calcium chloride or strong sulphuric acid, and can then be kept indefinitely in dry well-corked glass tubes, without losing its potency. The snake which is met with in greatest abundance in Puri is the *Enhydrina Bengalensis*, measuring from three to five feet in length, and it has a thick body and a large head. This species also furnishes the largest amount of poison, and from this alone have I yet been able to obtain a sufficient quantity to allow of a considerable number of experiments being performed with it. That of four other species, belonging to three different genera, have also been obtained in small quantities, so that four out of the six genera of Indian Hydrophidæ have now been examined, and will be dealt with.

Appearance and Quantity Ejected

When the clear watery drop of poison is dried, it forms white shining scales, freely soluble in water or normal salt solutions, and differing from the poisons of cobra and daboia by the absence of the yellow tinge of the latter. The only exception I have met with was a faint yellow tinge in the dried poison of a *Disteira cyanocincta*, the others having all been colourless.

The quantity of poison ejected at a single bite is of great importance in relationship to the deadliness of these snakes, and fortunately it is very small. In many of the smaller species it is often impossible

to get a drop at all, but probably when free in the water they can eject more poison than when being held close behind the head, with consequent great limitations of their power of motion. The amount of dried poison obtained from a single bite of thirteen different fresh specimens of the *Enhydrina* was weighed, and the average quantity was found to be 0.0094 gramme, or almost one centigramme. This is very much less than that obtainable from a cobra or a daboia, for the average amount of poison (dried) obtained from a cobra is, according to D. D. Cunningham, 0.254 gramme, or twenty-five times as much as is obtained from an *Enhydrina*. In fact, so small is the amount, that at the end of a season I had only been able to obtain about one third of a gramme of the latter poison, and for most of which I am greatly indebted to Dr. Reid of Puri. The poison also appears to be slowly formed, as a week after a snake had been made to bite, it is usually impossible to get any further poison from it, even if it bite vigorously. Yet if made to bite a small fish immediately after ejecting his poison, the bite is fatal in a short time, showing how fatal a trace of it is. The largest amount of poison obtained at a single bite was 0.023 gramme. The other species mostly gave a smaller quantity than the *Enhydrina*.

Effect of Heat on the Poison

On boiling a dilute solution of the poison, it becomes slightly opalescent. After being boiled for fifteen seconds, two minimal lethal doses were recovered from, after slight symptoms had appeared, but four minimal lethal doses proved fatal in a somewhat longer time than with unheated poisons. After boiling for one minute, four minimal lethal doses were recovered from after only slight symptoms. Thus the poison is readily destroyed for boiling for a short time, but merely bringing it to the boiling point does not materially effect its strength. Some similar experiments with cobra poison show that the latter is slightly more resistant to heat than is that of the *Enhydrina*.

Symptoms Produced by the Poison

The following symptoms are common to all the species yet tested, no differences having been met with, except with regard to the exact amount of the minimal lethal doses in different animals, which will be dealt with presently. Briefly, the symptoms produced by the poison of the Hydrophidæ may be said to be identical with those caused by cobra venom, with one very important exception, namely, that the former venom has no appreciable action on the blood, which is a marked feature of cobra toxin. In the case of warm-blooded animals, such as rabbits, rats, or birds, the symptoms produced by sea snake poisons are as follows. When minimal lethal, or slightly supraminimal lethal doses are given subcutaneously, there is always a long period before any symptoms of poisoning occur, the time varying in accordance with the dose from half an hour to several hours, in which respect it resembles cobra, and differs markedly from Daboia venom. If large doses are given, the symptoms set in much earlier, and in that case death rapidly results. The symptoms are best studied by the use of small doses, when the first thing noticed

is that the animal remains quietly in one position, and soon begins to show signs of drowsiness, closing its eyes at intervals. Next it begins to nod its head, but every now and then appears to wake up again and opens its eyes. In the case of birds—in which the symptoms can be best seen—the subject of the experiment next sits down on the floor of the cage, and although it can be made to stand up if disturbed, yet there is now evident commencing muscular weakness, and it can only walk with an unsteady gait. By the time this stage is reached, it will be found that the animal is breathing more deeply than normal, while the number of respirations is also increased to a variable, but often considerable, degree. From this time the picture is one of progressive paralysis, affecting all the muscles of the body, and ending with respiratory convulsions. The animal rolls more and more deeply until the nose or beak touches the floor of the cage, only to be raised again with a jerky motion. It is now unable to stand upright, and the eyes remain closed. The respirations are now very deep and laboured, and in case of birds, the beak is half open, and gaping takes place with every inspiration, while the head is more and more lowered until its vertex instead of the beak rests on the floor, and the animal is unable to raise its head. Very soon after this stage of paralysis is reached, convulsions set in, and the respirations immediately fall very greatly in frequency, while they remain deep in character, although less regularly so than before, some being shallow, so that Cheyne-Stokes breathing is somewhat simulated. The convulsions recur, and soon respiration entirely ceases, but the heart continues beating for some time, usually two or three minutes in the case of warm blooded animals after the breathing has entirely ceased. When the convulsions commence, the animal rolls over on its side in a state of nearly complete paralysis. Every word of the above description of the symptoms produced by the poison of the Hydrophidæ is equally true of cobra poisoning, so much so that if two animals are severally given minimal lethal doses of these two poisons, it is impossible to distinguish which animal has received which poison by the clinical symptoms produced, a fact which I have repeatedly demonstrated.

Post mortem, after death from the poison of the Hydrophidæ, there is little or nothing noteworthy found. The seat of injection is free from extravasation of blood and presents little or no serious effusion. The blood is of a dark colour, no doubt due to the respiratory paralysis. It is fluid on opening the heart, but rapidly clots when placed in a small test-tube, doubtless owing to the large amount of CO₂ gas in it. On standing it exudes serum, which is usually clear, but may be very slightly blood stained, although very much less so than in the case of cobra poisoning under the same circumstances. There is no intravascular clotting to be found *post-mortem* in the portal or other veins, as C. J. Martin first demonstrated in *Pseudechis* poisoning, and as occurs in acute Daboia poisoning, as recently shown by Lamb. No other naked-eye changes have been found after death from sea snake poisons.

In the case of cold-blooded animals, such as fish, which have frequently been used in these experiments, the symptoms are essentially the same in kind

as in warm blooded animals, although less easy to observe. After small doses there is the same long latent period, often lasting for several hours. Sometimes temporary excitement with rapid motion may be observed for a short time, but more often the picture is simply one of slowly progressing paralysis. In most kinds of fish this is also very well shown by a gradually increasing difficulty in maintaining the upright position, the fish slowly turning over on one side and then swimming up into its upright position again, only to slowly sink on to its side once more. The respirations will now be found to be deeper than normal, although not as a rule quicker, but, on the contrary, they steadily slow down from the beginning of the symptoms to the end without any marked increase in the rate. This paralysis of all the muscles and of the respirations steadily progresses until convulsions set in, to be immediately followed by a very rapid failure of the respirations both in number and depth, so that they become difficult to detect, and death soon follows. The heart will be found beating some time after the breathing has ceased, and no extravasation of blood or other noteworthy change is found *post-mortem*. Here again the symptoms are precisely similar in poisoning of fish by cobra venom.

The Potency of the Poison

By working out the smallest fatal doses of the poison per kilogramme of weight in different animals, and comparing them with those obtained by former workers for other snake venoms, we shall be able to estimate the potency of that now being dealt with. This has been done in the case of the poison of the *Enhydryna* by means of numerous experiments carried out with the mixed dried venom of a number of these snakes, with the following results. At the same time comparative experiments were also carried out with fresh dried cobra venom for comparative purposes. White rats were first tested, and 0.07 milligrammes per kilo weight was found to prove fatal, but smaller doses were sometimes recovered from. In the case of cobra poison 0.5 milligramme per kilo were necessary to produce death, while Lamb in Bombay found the fatal dose of this poison for rats to be 0.33 milligrammes. It is evident then that the poison of the *Enhydryna* is several times as potent as is cobra venom on rats. In the case of rabbits only a few experiments have been performed, but 0.04 milligrammes per kilo proved fatal in under four hours in one case, while in another 0.01 milligramme per kilo produced no symptoms but loss of appetite, but on giving a second dose of 0.02 milligramme per kilo five days later (the animal having fully recovered from the first dose in one day), death resulted in a few hours. On the other hand, Elliot found the minimal lethal dose of cobra venom for rabbits to be 0.7 milligramme per kilo weight, so that it is evident that these animals are many times as susceptible to the poison of *Enhydryna* as to that of cobra, the former poison being some twenty times as potent for them as the latter—a remarkable difference.

A larger number of experiments have been carried out with birds, pigeons and fowls being used. These also bear out the former ones in proving the far greater potency of the poison of the *Enhydryna*.

over that of the cobra or other poisonous snake yet examined. In the case of pigeons the minimal lethal dose, 0.05 milligramme per kilogramme, always proves fatal, while in fowls the fatal dose is 0.04. These figures may be compared with those obtained by D. D. Cunningham in his numerous experiments with cobra venom on fowls, for which he found the minimal lethal dose to be 0.5 milligramme per kilo, so that the poison of the Enhydrina for birds is at least ten times as potent as is cobra venom, which goes far towards neutralising the effect of the much smaller dose of poison ejected by the Enhydrina as compared with the cobra. Taking the minimal lethal dose of the Enhydrina for warm-blooded animals as 0.05 milligramme per kilo, the fatal dose for an average man of 70 kilogrammes would be 3.5 milligrammes, or about one third of the average amount of venom ejected by a fresh full grown specimen of this, by far the most commonly met with, kind of snake in the Bay of Bengal. There is good ground, then, for the belief in the deadliness of the Hydrophidæ.

The Minimal Lethal Dose for Fish

It is well known that it is necessary to give many times as large a dose of cobra venom, in proportion to the weight of the animal, in order to kill cold-blooded animals as is required for destroying the life of warm blooded animals. Now there is no doubt that the Enhydrina live on fish, and I have been able to ascertain that they can swallow those of considerable size. One specimen of Enhydrina after being handled in the process of taking poison vomited a piece of half digested fish, which, on comparison with complete fish of the same kind, was found to have certainly been a foot or more in length, while it was over 2 inches in depth. Such a fish could not have been swallowed if it had not first been killed, or at least paralysed to a marked degree. It is of interest, then, to ascertain the minimal lethal dose of these snakes against fish, and to compare it with that of the cobra. As I have not been able to find accurate records of the effect of cobra venom on fish, I have also ascertained this by a series of experiments, using the hardy mud fish (*Saccobianthus forsteri*), which lives for weeks in a small vessel of water. It was found that 25 milligrammes per kilo of cobra venom had to be given to be certain of causing death, although sometimes a slightly smaller dose was effective. Thus fifty times as much cobra venom is required to kill a fish as is sufficient to kill a warm-blooded animal—a very marked difference. On testing the same species of fish with the poison of the Enhydrina, it was found that 0.5 milligramme per kilo of freshly dissolved poison was always fatal, and sometimes a smaller dose caused death. Thus the dose of this sea-snake poison required to kill fish was but ten times as much as the minimal fatal dose for warm-blooded animals, that is, considerably less than we found to be the case with cobra poison. In other words, the poison of the Enhydrina is much more deadly than is cobra venom for fish, even allowing for the greater potency of the former for warm-blooded animals, so that it appears to be specially adapted for the needs of the sea-snake, which lives on fish, being in all about fifty times as potent for fish as is cobra venom. This great concentration of the poison may be of

considerable advantage to the reptile when dealing with such active prey as fish in their own element. This special affinity of the poison for fish was even more marked in the case of some of the other species tested. Thus, that of a single species of the *Distena cyanocincta* was fatal to pigeons in doses of 0.5 milligramme per kilo, being thus considerably weaker than that of the Enhydrina, but only 1 milligramme per kilo was required to kill fish, that is but twice as much as was needed to kill birds. Similarly with the *Distena viperina* the minimal lethal dose for pigeons was 0.5 milligramme, and for fish only 0.75, or but very little more. Again, the poison of the *Hydrophis cantoris* for both pigeons and fish was just the same as the last mentioned species. Lastly, the poison of the *Hydrus platurus* killed pigeons in doses of 0.075 and fish in one of 0.25 milligramme per kilo, being thus very deadly for both cold and warm blooded animals. The above include four out of the six genera of Hydrophidæ found in Indian waters, so that, although the poison obtained from the last four species was from single specimens, and therefore cannot be taken as more than approximately accurate, yet they suffice to prove that the Hydrophidæ as a class secrete very virulent poisons, which are specially poisonous to fish. It is also worthy of note that the two genera which proved to me most deadly to warm blooded animals, namely, the Enhydrina and the *Hydrus platurus*, are just the two which the fishermen at Puri said were the most dangerous ones, as the accuracy of their statement points to actual experience in the human subject of their deadliness having been handed down among them. Some of the smaller species, however, probably do not eject sufficient poison to prove fatal to adults, at any rate, and hence are not so much dreaded by the fishermen. It will also be observed that the poison of the *Enhydrina Bengalensis* is the most potent of those so far tested, while it also yields the greatest amount of poison, with the exception, perhaps, of the *Distena cyanocincta*.

Effect of the Poison on other Cold blooded Animals

I have not yet been able to test any extensive series of other cold blooded animals to see if they are equally susceptible to the poison of the Hydrophidæ as fish are, but in one instance a frog weighing 30 grammes was injected with a dose of 0.2 milligramme per kilo, with the result that it showed well marked symptoms of paralysis, but eventually recovered, so that it would appear to have been about as susceptible as fish. Some harmless snakes were injected with noteworthy results. Thus, two specimens of the *Coluber fasciolatus* were injected with doses of 10 and 50 grammes per kilo respectively, with the poison of the Enhydrina, with no ill effect, and the former received a second dose of 50 milligrammes per kilo three days after the smaller dose, equally without effect. Here we have a harmless colubrine snake withstanding 100 times the fatal dose for a fish and 1,000 times that for a warm-blooded animal. Further, two specimens of the harmless green whip-snake (*Dryophis mycterizans*) were tested, but in this species 25 milligrammes per kilo in one instance, and 15 in the other, each produced death in less than two hours, so that a smaller dose would nearly certainly have been fatal. This

opens up a large question which must await further investigation

The Physiological Action of the Poison on the Blood

The striking similarity of the symptoms produced by the poison of the Hydrophidæ and by cobra venom leads one to expect a similarity of action on the blood. The researches of Cunningham have shown that cobra poison has a very marked power of dissolving the red corpuscles of the blood and also in reducing its coagulability, and, contrary to the views of Lauder Brunton and Fayrer, he holds that these blood changes are the essential features of the action of the poison, and not its action on the nervous system, as held by the latter authors. Experiments have been carried out to test the effect of the poison of the Hydrophidæ on the blood, with unexpected and important results. Taking first the poison of the Enhydrina, with which most of the observations have been made, and remembering that it is ten times as potent for warm blooded animals as is cobra venom, we may compare the action of the two poisons in dissolving the red corpuscles of the warm blooded animals, the blood of pigeons and of the human species having been used in the experiments. The method of mixing the poison in different degrees of dilution with a minute measured drop of blood, and counting the number of corpuscles with a hemocytometer before, and at varying periods after, the addition of the venom was adopted. The poisons were always dissolved in isotonic salt solutions, and equal quantities of blood in the same salt solution, but without the addition of the venom, used as controls. These control solutions showed no dissolution of the red corpuscles after twenty-four hours. From 5 to 10 cubic centigrammes of blood were added to from $\frac{1}{2}$ to 1 cc of the isotonic solution of the poison, varying strengths of the latter being tested in this way. Pigeon's blood is specially well suited for these experiments, as the bodies of the corpuscles are dissolved while the nuclei remain visible. It was found that a 1-in-1,000 solution of cobra venom (1 milligramme in 1 cc) produced a very rapid solution of the red corpuscles, which had all disappeared in seven minutes. A 1 in 20,000 solution took a much longer time to produce complete dissolution, namely two and a half hours. In the case of human blood a 1 in 10,000 solution of cobra venom dissolved the whole of the red corpuscles in from fifteen to thirty minutes, while one of a strength of 1 in 20,000 took about one hour to do so. A 1-in-100,000 solution had very much less effect, having produced only a slight diminution in the number of the red corpuscles within one hour's time. The white corpuscles were not dissolved by the venom in the strengths used.

Let us now compare these data with those obtained with the poison of the Enhydrina, bearing in mind the much greater potency of the latter as compared with cobra venom. The poison of the Enhydrina was mixed in the same way as above described with the blood of pigeons and with human blood, in strengths of 1 in 1,000, with the result that at the end of one or two hours there had been no appreciable dissolution of the red corpuscles. On testing again several hours later, slight dissolution

was found to have taken place, and by this time the solution also showed naked eye evidence of commencing hæmolysis. After having been kept at room temperature (from 70° to 80° F) for twenty-four hours the dissolution appeared to be complete, but, on examination with the microscope, a few red corpuscles were still found to be undissolved, showing that even after this lapse of time the hæmolytic change was not quite complete. The poison of the *Disteria cyanocincta* and the *Hydrophis cantoris* were also tested in the same way with precisely similar results, namely, that a strength of 1 in 1,000 had no appreciable hæmolytic effect at the end of one hour, but caused nearly complete dissolution at the end of the course of twenty four hours. This is about the same effect as is brought about by a solution of cobra venom of a strength of 1 in 100,000, although cobra venom has a potency of only one-tenth that of the poison of the Enhydrina. Thus we find that in proportion to its potency the poison of the cobra has about 1,000 times as great a hæmolytic effect on the red corpuscles of warm blooded animals as has that of the Enhydrina. We have already seen that the latter poison produces no blood stained effusion at the site of the injection of a fatal dose, evidently on account of the strengths used having no hæmolytic action, for the solution employed for the small animals experimented on were 1 in 10,000 or less. If we work out the amount of poison required to dissolve a certain amount of the blood of a pigeon, for example, we find that it takes about 200 times a fatal dose to dissolve 1/2000th part of the bird's blood in twenty-four hours, calculating this fluid to be one-thirteenth of its body weight. It is obvious, then, that ordinary fatal doses of the poison of the Hydrophidæ can have no appreciable hæmolytic effect, and that death cannot be attributed, even in a partial degree, to its action on the blood of the animal killed by it. This can also be demonstrated by another method of experiment, namely, by counting the number of the red corpuscles before the administration of the fatal dose of the poison, and again immediately after death. This I have done several times, with the result of showing that no dissolution of the red corpuscles resulted from the action of a lethal dose of the Enhydrina poison. For example, a fowl's blood was counted, and 3,190,000 red corpuscles per cubic millimetre were found. A lethal dose of Enhydrina poison was then injected subcutaneously, which proved fatal in just one hour, when the blood count showed 3,120,000 red corpuscles in the same quantity of blood.

Next we have to deal with the action of the poison on the coagulability of the blood. In the case of cobra venom marked changes are produced, as shown by D. D. Cunningham, and this point has recently been studied by Lamb. The virus has the action of reducing or totally destroying the clotting power of the blood when mixed with it in small quantities. I have made a few observations on this point with the following results. Wright's tubes were used, the solution of the poison being first drawn up into them, and then an equal quantity of the blood drawn up and quickly mixed with the venom solution in the mixing chamber, and blown down into the tube again, and the conditions as regards clotting examin-

ed in a series of such tubes at given intervals. The clotting time, when mixed with an equal quantity of the normal salt solution (in which the venom was also dissolved) of a rabbit, having first been found to be three minutes, that of different strengths of cobra venom in normal salt solution were found to be as follows when a 1-in 10,000 solution was added the coagulation time was seven and a half minutes, with 1 in 1,000 solution it was twenty minutes, and with a 1 in 200 one the blood was still quite fluid after twenty four hours, its coagulability having been completely destroyed. On testing the effect of the poison of the *Enhydryna* in a similar manner it was found that a 1 in 1,000 solution had no effect in reducing the coagulability of the blood, which still clotted solid in three minutes, while a 1 in 200 solution was added the blood still clotted in five minutes, showing only a slightly reduced time with the same strength, which in the case of cobra venom had completely destroyed the clotting power, and this, too, it must be remembered, in spite of the *Enhydryna* poison being ten times as powerful as that of the cobra. It is evident, therefore, that the poison of the *Enhydryna* has no appreciable effect in ordinary dilute minimal lethal doses on the coagulability of the blood, while, as a matter of fact, we have already seen that such doses do not produce any loss of the clotting power of the blood. This was also the case when fifty times a minimal lethal dose of the venom was injected into the vessels of rabbits with the result of causing death in about six minutes.

The above experiments show that the poison of the *Hydrophidæ* has no appreciable action on the blood of animals, which can in any way account for the symptoms and fatality caused by it, yet it kills with precisely the same symptoms as are produced by cobra venom, and, as we shall see presently, there are good reasons for believing that it has a special action on the nervous system. It will be evident at once that this furnishes a very strong argument in favour of the view that cobra venom also kills through the nervous system, as held by Lauder Brunton and Fayrer, and not through the blood, as maintained by Cunningham. It is also of special interest to observe that although the action of the poison of the *Hydrophidæ* on the blood is practically a negligible quantity in its lethal effects, yet it still persists to a slight, but easily demonstrable, degree, for if it so persists in the sea snake, it may also persist in a still greater degree in the case of the cobra without being a very active agent in the lethal effects produced by that poison, which kills through the nervous system as does that of the *Hydrophidæ*. In this connection it is interesting to observe that all through the poisonous snakes we find evidence of an action on the blood and on the nervous system in different degrees. Thus, beginning with the viperine snakes, we first have the *Vipera Russellii*, which appears to be the purest blood poison of the known venomous snakes, killing by producing intravascular clotting in large doses, and the opposite effect of total loss of coagulability in repeated subminimal lethal ones. Then we come to the class of pit-vipers, of which the rattlesnake of America has been most closely investigated by Weir Mitchell and Reichert. They also found a very marked effect on the blood, apparently similar to that produced by the daboia, but, combined with this, we have a marked paralytic effect

on the nervous system, and especially on the respiratory centre, for the authors mentioned conclude that although death may occur through the effect on the blood, yet they add "There can be no question, however, that the respiratory centres are the parts of the nervous systems most vulnerable to the poison, and that death is commonly due to their paralysis." Leaving the viperine snakes and passing on to the poisonous colubines, we first come to the Australian species, so ably studied by C J Martin, namely, the *Pseudechis*, and we find again a combination of the two effects to such a marked degree that, when the venom is administered intravenously, death results from intravascular clotting, as in the viperine snakes, while if minimal lethal doses are given subcutaneously death results through paralysis of the respiratory centres. Next we come to the cobra, another colubrine snake, and here we find the nerve symptoms quite predominate, although some considerable effect on the blood in the form of reduction of coagulability and dissolution of the red corpuscles still survives, although it now takes quite a secondary position to the effect on the nervous system. Lastly, we have the *Hydrophidæ*, which, morphologically considered, are but colubrines modified for an aquatic existence, and here we find a practically pure nervous poison, although there still persists a trace of action on the blood if strong solutions of the venom are employed, although it can have no actively poisonous effect. The very slight action found, however, may be of some value to the snake in the following way. We have seen that a 1-in 200 solution of the *Enhydryna* poison has a slight retarding effect on the clotting power of the blood, which would doubtless be more marked in still more concentrated solutions, so that it is highly probable that the pure poison would have the effect of preventing the clotting of the blood at the point of injection of the poison, and so allow of its more ready absorption into the circulatory system through the patent vessels severed by the fang. This will account for the extreme rapidity of the absorption of the poison of the cobra, for Fayrer showed long ago that if immediately after a dog has been bitten by this snake the fold of skin punctured is raised and freely excised, still the animal dies of the poison. The survival of some degree of action on the blood in the case of the cobra and the *Hydrophidæ*, although not in itself an important element in directly causing the death of the animal, may nevertheless be of service in causing the venom to be more rapidly absorbed in the way just pointed out.

Action of the Poison on the Pulse and Respiration

We have already seen that in slow poisoning the respirations become more and more laboured until convulsions set in and they quickly cease, while the heart continues to beat for a short time. For the accurate study of the exact effects on the respiratory and circulatory systems, proper recording apparatus is necessary, but as these were not available, I had to content myself with a record of the rate of the pulse and respiration after the intravascular injection of a large and rapidly fatal dose of the poison into rabbits under the influence of chloroform, with the following results. A dose of 1 milligramme per kilo weight, or at least twenty times a minimal lethal dose was used, and death resulted in from six to eight minutes, taking the time up to the cessation

of the heart's beat. The effect on the respiration was simply a uniformly steady slowing down until convulsions set in when the breathing finally ceased at once. For example, in a rabbit which had received a dose of 1 milligramme per kilo directly into the carotid artery (the artery being clamped immediately afterwards to prevent hæmorrhage), the respirations were 60 per minute immediately before the injection of the poison. During the four minutes immediately following the injection, the number of respirations were as follows—First minute, 56, second minute, 51, third minute, 42, and the fourth minute, 33. In the first quarter of the fifth minute they were 8 at which point convulsions set in and the breathing stopped. The respirations were written down every quarter of a minute, and the figures for the separate quarters show an equally steady diminution of the number of respirations as the minute periods just given. In the same experiment the pulse showed the following changes. Before the injection it was 105 per minute. During the second half of the first minute after the injection it was 47 (that of the first half minute was lost), during the second minute it was 106, showing no alteration up to this time. During the third minute it fell to 99, and during the fourth to it further fell to 48, that for its first half having been 32, and for the second half 16. During this steady fall in the pulse rate, its volume and force became increased. During the fourth minute, as already mentioned, convulsions set in, and the pulse was lost for about a minute, only the first and third quarters of the fifth minute having been recorded as 8 and 11 beats respectively. During the last three quarters of the sixth minute the beats were 15, 15 and 17 respectively, being now very feeble instead of unusually full as before the cessation of respiration and onset of convulsions. During the first and second quarters of the seventh minute, the beats were 26 and 20 respectively, at which point the heart finally ceased to beat, that is, three and a half minutes after the cessation of the breathing. Very similar results have been obtained in another experiment, in which the same dose was injected into the jugular vein, a steady fall in the respirations first occurring, and they ceased with the onset of convulsions, while an equally steady fall in the pulse rate occurred later than that of the respirations, accompanied with an increased volume of the artery, the tension rapidly falling when the respiratory convulsions set in, but the pulse at the same time became more rapid again until it finally declined once more and then ceased. These experiments appear to show that the primary effect of the poison is a paralysing action on the respiratory centre, and that the cardiac failure is secondary to that of the respirations. The exact explanation of the slowing of the pulse with increased volume of the artery, I am not prepared to say without the aid of pressure tracings, which I have not yet been able to take

The Affinity of the Nervous System for the Poison

We have seen that the poison of the *Enhydryna* is much more potent than even that of cobra, and it appears to be somewhere intermediate in virulence between cobra and tetanus toxins. Further, we know that the repeated injection of gradually increasing doses of the latter two poisons into suscep-

tible animals leads to the formation of an antitoxin in the system. This marked similarity of the nerve poisons of the colubine snakes and tetanus toxin leads one to inquire whether these snake venoms do not exert their noxious influences in the same way that tetanus toxin does, namely, by being taken up from the circulation and fixed in the nerve cells until a sufficient dose has been absorbed to paralyse the nervous matter. We know from the experiments of Wassermann that small amounts of tetanus toxin can be thus fixed by fresh nerve matter in a test tube, and so rendered inert when subsequently injected into a susceptible animal. It seemed to be worth while to repeat these experiments with the poison of the *Enhydryna*, and although I have not had time to carry out a sufficiently exhaustive series of experiments to settle this point, yet the following data appear to me to have some value as being highly suggestive of the mode of action of these nerve paralysing snake venoms.

The experiments were carried out in the following manner. A weak solution of the venom, such as is used when giving minimal lethal doses, was placed in a small sterilised test tube, and a given quantity of fresh brain matter from a pigeon was added to it, and the whole kept at blood temperature for a given time. Another solution of the same strength was kept at the same temperature for an equal period of time without the addition of any brain matter, for the purpose of injecting control animals, which were always used. Double and quadruple minimal lethal doses were used, and the brain matter was broken up so as to mix it with the poison as intimately as possible, and subsequently injected without filtering, so that most of the brain matter in a fine emulsion was injected with the poison. It was found that pigeons injected with these emulsions always lived longer than the control one, while they sometimes recovered from double, and in one instance from quadruple, minimal lethal doses of the poison after being mixed for from half an hour to eighteen hours with a small quantity (from 3 to 20 centigrammes) of fresh brain matter. The most marked effects were obtained by the use of the hemispheres of the cerebrum, the instances of complete recovery from lethal doses having occurred in these instances. The cerebellum had a less marked effect, only considerable prolongation of life having occurred, while in one experiment with the medulla and pons no very marked effect was observed. The grey matter, then, appears to have most effect in fixing the poison, as is also the case with tetanus toxin. These experiments, then, point to the action of the toxins of the *Enhydryna* being very similar in nature to that produced by the tetanus bacillus. A few experiments were also done with cobra poison in the same way, using the cerebrum only, but here the results were not so marked as in the case of the *Enhydryna* poison, only a retardation of the onset of symptoms and of death having been observed.

Antitoxins

Lastly, we have to deal with the question of the possibility of obtaining an antitoxin against the poison of the *Hydrophidæ*. It has now been abundantly proved that Calmette's antivenin is not a specific against all kinds of snake venom as he

claimed, although in large doses (40 c c according to Lamb) it is undoubtedly of great value against the poison of the cobra. The very marked similarity of the symptoms of poisoning by the Hydrophidæ with that produced by cobra, lead one to hope that the antitoxin, which is efficient against the latter would also be of value against sea snake venom. This has been put to the test by adding minimal and slightly supraminimal lethal doses of the poison of the Enhydrina to one half c c of fresh Calmette's antivenin (which had only reached Calcutta a very short time before it was used) and after allowing the mixture to stand at blood heat for half an hour, injecting the whole subcutaneously. White rats were used in the experiments, and the amount of antivenin in proportion to the amount of poison was relatively enormous as compared with the dose recommended in the treatment of men bitten by venomous snakes. Yet the animals uniformly died in just about the same time as the controls, so that it is evident that Calmette's serum is of no use against the poison of the Hydrophidæ.

On the other hand, the similarity in the action of this poison to the cobra and tetanus toxins leads one to expect that an antidote could be prepared against it in a similar way to those of the latter poisons. It is only during three months that I have been able to experiment on this point, fowls being used. It soon appeared that the doses had to be very slowly increased, or fatalities occurred, and in the limited time these experiments lasted, I was only able to immunise one fowl against the minimal lethal dose of this poison, and a slightly larger dose proved fatal with the usual symptoms. My intention was to immunise a series of animals against the Enhydrina poison, and then to test them with small doses of poisons from the other Hydrophidæ, as owing to the large variety of this class of snakes, no antidote would be of any practical value unless it was equally potent against all the genera and species, or at least against the most commonly met with ones. This important and interesting question must await further investigation.

One experiment, which was carried out in order to test if the serum or bile of the Enhydrina had any antidotal properties, deserves mention in this connection. Three puppies of the same litter were used, all very much of the same size. Each received an equal quantity of Enhydrina poison, but in the first this was mixed with a four minims of the serum of the Enhydrina, in the second it was mixed with four minims of the bile of the same snake, and the third received the poison solution only as a control. The mixtures were injected ten minutes after being made. The result was that all three animals died in a little over an hour, the control surviving slightly longer than the others. It appears, then, that neither the serum nor the bile of this snake has any antidotal properties against the poison, and cannot, therefore, be utilised in the treatment of their bites. Further research will be necessary to determine if a practically efficient antidote can be prepared, which I hope to undertake when a sufficient venom for the purpose can be obtained.

This concludes the most important experiments so far carried out by me with the poison of the Hydrophidæ. They have necessarily been strictly

limited by the very small amount of poison which I have yet been able to obtain, and by the equipment of the laboratory at my disposal, for the use of which I am indebted to the kind permission of the Committee of the Zoological Gardens of Calcutta. I am also indebted to the Bengal Government for a grant towards the expense of this investigation.

ANTIVENINE AS AN ANTIDOTE FOR SEA-SNAKE BITE

By H. W. PEAL, F.E.S.,

ASSISTANT ENTOMOLOGIST,

Indian Museum, Calcutta

WHEN out camping at Dhamia in Orissa in April, 1903, a man who had been bitten by a sea-snake was brought to me. He had been bitten at 7-30 P.M. on the 1st of April and was brought to me at half-past two the next day. I was told by the men who brought him and by the man himself later on, that he was bitten when about to catch a snake which had been caught in one of their fishing nets. It is the custom of the fishermen to throw the snakes entangled in their nets overboard as soon as the nets are drawn in. To do this they catch the snakes very skilfully by the tail.

The man was considered very bad by the men themselves, in fact he was not expected to live. The men had tried to drive out the poison by "jadu," which failing, the man was brought by boat (8 miles) to me.

Man's name, Puchi, manji. House, Boyang Kowjaree. Three koss (6 miles) above Chandbally. Appearance, man in a state of collapse, semi-unconscious, unable to speak, eyes dull, almost closed. Pulse, 86 (approximate). The man had to be carried from the boat to my tent. He was laid down on the floor.

Examined bite, position third finger of left hand, just above the first joint. Punctures $\frac{3}{4}$ of an inch apart, finger swollen, tense, stiff, unable to bend it.

As soon as the man was brought I had some water boiled. As there was a fire this was soon done. I was unable to boil syringe and needle in boracic acid as I had none. Boiled syringe and needle for five minutes. I washed the man's left flank with soap and water and rubbed on iodol in lieu of a more suitable antiseptic. I gave the man an injection of 5 c c of antivenine ten minutes after he was brought to me. The man was conscious enough to feel the sting of the needle as I pushed it under the skin. Three or four minutes after the injection the man, with some assistance, was able to sit up. He said that he felt much better. He complained of great pain at the back of his neck and also at lumbar region. The pain in the latter place was much aggravated on trying to stand up. He was able to speak fairly coherently after a little time. His

eyes were brighter, and he seemed to be aroused from his lethargy. This was so apparent that it was observed by the men around. He complained of great heaviness in the head. This he said was gradually passing away. He complained of hunger. He had eaten nothing since he was bitten. After a few minutes he tried to get up, but he was unable to walk without support. Knees weak and bent inwards. He instinctively placed his hand on his back at lumbar region when he tried to get up. Pain was also felt at shoulders and knees.

I had about a hundred living sea-snakes with me, species belonging to the three genera, *Enhydrius*, *Hydrius*, and *Distria*. He identified *Enhydrius valakadien* as being the snake which bit him. So did the men who were with him. He was quite positive as to the species and said, when I cast a doubt on the accuracy of his identification, that the snake which bit him was in the net the men were hauling into the boat. He tried to catch it by the tail in order to throw it back again into the water, and the snake bit him and hung on. He had to tear it off his finger. Anyone who has examined the fangs and teeth of a sea-snake will understand this. The teeth are all bent backwards making it a difficult matter for the snake to let go. The state of the punctures also corroborated this. The punctures were somewhat long, as if the snake had been torn off. I found no broken teeth in the punctures. The snake was said to be $3\frac{1}{2}$ to 4 feet long.

At three o'clock the man said that he was feeling much better. He got up at five minutes after three and tried to walk off (with assistance), but I detained him. The man seemed so much better after ten minutes that the snake man belonging to the zoo (who was with me) said that he felt sure that the man was not bitten by a poisonous snake. He picked up so soon. Later on, however, he said that undoubtedly the man was bitten by a poisonous snake, but that the venom injected was not enough to kill him. This may be possible as the man had kept alive for several hours. On the other hand, the fishermen were quite positive that the man would die. They said that the case was a very bad one, as from the time the man was bitten to the time he was brought to me he was gradually getting worse. They may possibly be right as three or four fishermen are bitten every year here, and the symptoms must be familiar to them. So far as I can gather, about 25 per cent die. Time death takes place from three to forty hours.

The antivenine did the man so much good that he himself asked me to give him a second injection. This I gave him at 3-25 P.M. (5 cc). I had another bottle of antivenine with me but did not use it as the antivenine in the bottle seemed to be cloudy and muddy.

Date on bottle used, 8th May 1900

Pains in joints and head disappeared on second injection (which was given on the opposite flank). The man sat in a crouching attitude. Weakness of legs still conspicuous.

At five o'clock the man walked away (with assistance) to the boat he had come in. The men promised to bring him immediately if he got worse, but they would not let the man remain behind. They also promised to let me know how the man was in a day's time. The men seemed to be quite sure that the man would recover as he seemed so much better after the injections.

From information given me by Captain L. Rogers, I.M.S., which I am not at liberty to divulge, I felt pretty sure that the antivenine would have a beneficial effect for sea snake bite. Captain Rogers is a well known authority on snake poisons, and a paper will, I believe, be shortly read by him on the action of sea-snake poison before the Royal Society. He has informed me as to the action of sea-snake poison, but naturally I cannot say how it acts until his paper has been published. I may state that the quantity of poison in the glands of a large *E. valakadien* is about five drops. The poison is extremely thin as compared with cobra poison, and the colour is lighter. Dried average weight $\frac{1}{8}$ grn, or less in each snake.

The fangs are small. A curious fact about the fangs is that they are frequently double. Usually only one of the fangs is double, but sometimes both the poison teeth are double.

E. valakadien is the commonest snake hereabouts. Average percentage from several hundred snakes got me by the fishermen about 80 Rest chiefly *Hydrius* (several species) and *Distria robusta*.

The syringe I used was a new one (5 c.c. capacity) kindly lent me by Lieut-Col. D. Semple, M.D., R.A.M.C., Director, Pasteur Institute, Kasauli. He also kindly gave me the antivenine I used.

Information was sent me the next day by the fishermen telling me that the man was all right. He was quite well a couple of hours after the second injection.

I saw the man again on the 8th of May. He was in perfect health. I believe that this is the first time that the use of antivenine has been recorded as being used as an antidote for the bite of a sea-snake.

Review

Manual of Practical Anatomy—Volume I

By D. J. CUNNINGHAM, M.D., D.Sc., LL.D., D.C.L., F.R.S. YOUNG J. PENTLAND, Edinburgh and London. Third Edition, 1903.

ANY one who can remember the dissecting manuals published by Dr. Cunningham a quarter of a century ago, when he was Senior Demonstrator in the University of Edinburgh, where he is now the Professor of Anatomy, must acknowledge that the student of to-day

has the advantage with such a work as the third edition of this Manual of Practical Anatomy. These dissecting manuals were what their name implies, they gave excellent practical directions, which, however, required to be supplemented by such works as Elles, Heath, and other works on practical anatomy. Then Professor Cunningham brought out his Manual of Practical Anatomy, the first edition of which could stand comparison with other standard manuals. At that time the value of specimens and models of the internal viscera were much in vogue, and the study of frozen sections advanced considerably our idea of the topography and relations of the abdominal viscera. But these dealt chiefly with the body in the horizontal position, and gave but one phase of the conditions of the hollow viscera. Nowadays formalin has been of great use in giving us more precise ideas than frozen sections could do of the alterations in adjacent organs produced by the degree of expansion or contraction of the hollow viscera.

In the second edition it was stated that most of the illustrations were new, and now in the third edition we find that a large number of these have been withdrawn and have been replaced by others that are in every way clearer and better and more artistic. Take for example the introduction of figures of the bones with coloured origins and insertions, in the text where the muscles are described. The present diagrams of the brachial, lumbar and sacral plexuses appear to us an improvement on the old diagrams, clear though those are. We also welcome the excellent illustrations of the articulations and their ligaments, and the many new figures for the sections dealing with the perinæum, abdominal and pelvic viscera and vessels. In spite of these alterations we have to congratulate the author on having condensed instead of expanded this volume. It deals with the upper and lower extremities, and the abdomen. The section on the upper limb is ten pages shorter, that on the lower limb seventeen pages less, and that on the abdomen is curtailed by twenty pages. This by no means detracts from the value of the work, which can be thoroughly recommended as a practical manual of anatomy which is second to none. In our view there are no descriptions of the peritoneum and pelvic fascia which can vie with those of Professor Cunningham, and the rest of the work is equally clear, precise and thorough. This is a book which is bound to live, to have a wide circulation amongst students, and to pass through many editions.

Operative Surgery—By HERBERT W. ALLINGHAM, F.R.C.S. London. BALLIERE, TINDALL AND COX, 1903.

THIS is a book which should meet with ready acceptance and will probably have a wide circu-

lation. In form it resembles Von Esmaich's *Surgeon's Handbook*, which has been a classic with army surgeons during the past quarter of a century, but it is quite differently arranged. In the latter, ligature of arteries are grouped by themselves, likewise the amputations, disarticulations and resections are grouped by themselves. Mr. Allingham's plan seems handier. He has classed his operations regionally, e.g., the first chapter deals with the operations on the arteries, nerves and joints, the amputations, plastic operations and osteotomies of the upper extremity. The same procedure is adopted for the lower extremity, head and neck, abdomen and pelvis. The author is to be congratulated on his brevity, there is not a superfluous sentence, and yet the text is as clear and graphic as the excellent diagrams and illustrations which appear on almost every page. The work is intended for rapid reference by a surgeon wishing to look up the leading features of an operation, and for the student performing operations on the cadaver or watching them being performed on the living subject. The memoranda on each operation are concise and practical, and only the best and simplest operations are given in detail, alternative measures being referred to much more briefly. The section dealing with operations on the abdominal viscera is particularly good.

The publishers are to be congratulated on their share of the work, for the binding, paper and illustrations are all that could be desired.

A Manual of Practical Surgery—By Lt-Col C. P. LUKIS, I.M.S. Victoria Press, Agra.

MEDICAL students in the United Provinces of Agra and Oudh are fortunate in having treatises written for them in the vernacular by energetic officers of the Indian Medical Service. In 1897 Lieutenant-Colonel G. M. Giles published a treatise on antiseptic surgery under the title of *Qawaid-i-Jarahat-i-Jadida*, printed in Roman characters. Now we have the Principal of the Agra Medical School, Lieutenant-Colonel C. P. Lukis, M.B., F.R.C.S., I.M.S., publishing a portly volume on practical surgery in Urdu characters. The volume is well and profusely illustrated by wood-cuts, resembling those found in the best English text-books on the various kinds of bandages, means of arresting hæmorrhage and the ligature of arteries, fractures and dislocations, splints and other apparatus. The book fills a want in Urdu text-books, none of which go so much into the practical details of the art of surgery. First-class Hospital Assistant Luchman Pershad, who is Demonstrator of Anatomy in the Agra Medical School, rendered valuable assistance in the compilation, translation and illustration of the book.

Atlas and Epitome of Otology—By GUSTAV BRUHL, M D, of Berlin, with the collaboration of Prof Dr A POLITZER, of Vienna Philadelphia and London W B SAUNDERS & Co, 1902 Pp 292, with 244 coloured figures on 39 lithographic plates and 99 text illustrations

THIS authorised translation from the German, edited by Dr S MacCuen Smith, is one of Saunders' Medical Hand Atlases, and is one of the best of a really excellent series. The plates are beyond reproach, and very well selected. They illustrate very thoroughly the anatomy and pathology of the ear. The 'Epitome' is modestly so-called as it contains a fuller and better account of the anatomy and physiology of the ear, of its examination, and of the pathology and treatment of the diseases affecting it, than many text-books. It is well up-to-date. The book forms a useful companion to the larger works of Politzer and others, and can be strongly recommended to all who are interested in otology.

Correspondence

DEMONSTRATION OF PLAGUE BACILLI IN BLOOD

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—It has hitherto been held that plague bacilli are only found in the blood stream in a few cases, or if in many, only at the final stage of the disease.

This has led to a desire on the part of those in charge of general hospitals for some method of diagnosing the disease early and rapidly, so as to prevent cases of fever getting into the wards or if in, remaining so long that it is impossible to move them.

The bacilli are always in the blood from the first, and the difficulty in finding them has been due to the wrong method of preparing the film.

The last dozen or so of cases we have diagnosed at once—on the 1st or 2nd day of the disease—and the diagnosis has been confirmed by the Bacteriologist and by the Medical Officer of the infectious hospital, and I therefore venture to bring to your notice this useful aid to diagnosis.

The method used is that known as Ross' method for demonstrating malarial pigment in the blood and which has been fully described in the *Lancet*, &c., of last year.

The film should be taken a little thinner and a little more spread out—dry—decolorise in water as by his method and stain.

In every case after a very little time spent in searching numerous bacilli of the typical form and colouring will be found at any and every stage of the disease.

Yours faithfully,

GOVERNMENT CIVIL HOSPITAL,

HONG KONG 18th May 1903

J BELL,

Superintendent

Service Notes

LIEUTENANT COLONEL P H BENSON, M B, I M S, is appointed to act as Inspector General of Civil Hospitals and Sanitary Commissioner, Burma, during the absence of Colonel C C Little, M D, I M S.

THE services of Captain W E Scott Moncrieff, M B, I M S, are placed at the disposal of the Foreign Department, and those of Lieutenant J Masson, M B, I M S, at the disposal of the Government of Bengal.

LIEUTENANT COLONEL A C YATE, who was recently arrested on the Afghan frontier, is the Honorary Organising Commissioner for India of the St. John Ambulance Association.

CAPTAIN DONALD STEWART in his report on an expedition in the Gold Coast territories gives prominence to the following incident—"I must also bring to the notice of His Excellency the Governor an act of the greatest gallantry. On Captain Pamplin Green being struck in the chest by a poisoned arrow (one with a red tip, which are the most virulent) Assistant Colonial Surgeon Garland, without the slightest hesitation, at once proceeded to suck the wound, of course at the greatest risk to himself, and continued to do so for seven or eight minutes, until he had extracted all the poison that he could. This action of his I have little hesitation in saying was probably the saving of Captain Green's life, who, even as it was, had a very narrow escape from death, the result being in doubt for two hours."

TRAINING OF BRITISH SOLDIERS IN VICTUALLING, BAKERY AND BUTCHERY WORK.—The Government of India have decided that permanent victualling duties with corps, and hospitals, in cantonments, shall be left entirely to native victualling agents. British subordinates of the Supply and Transport Corps hitherto employed on such duties shall be the charge of butcheries, bakeries, &c. As it is important, however, in time of war, to have trained Europeans for victualling duties in addition to native victualling agents, the Commander in Chief directs that a sufficient number of men be trained in every British unit for victualling, bakery, butchery and store depot work, so as to enable them to take up these duties as victualling sergeants on field service, on the line of march, at camps of exercise, or when the units to which they belong are detached.

CAPTAIN J GOULD, I M S, to the medical charge of the 14th Bengal Lancers, Captain F J Watling, I M S, to the officiating medical charge of the 4th Rajputs, Major P Behr, I M S, 43rd Guikhas, is granted furlough for one year.

LIEUTENANT COLONEL A CHROMBIE, M D, I M S, formerly Editor of the *Indian Medical Gazette*, went to the International Medical Congress at Madrid as the delegate representing India.

LIEUTENANT COLONEL C C MANIFOLD, I M S, has been granted furlough for two years, his services having been replaced at the disposal of the Government of India, Home Department.

CAPTAIN R G TURNER, I M S, acts as Civil Surgeon of Budaun.

MAJOR J B JAMESON, M B, I M S, is granted privilege leave, and during his absence Captain V B Bennett, M B, I M S, acts as Medical Officer to the Kathiawar Political Agency, while Dr S S Nightingale acts for Captain Bennett as Civil Surgeon of Broach.

CAPTAIN R STEEN, I M S, 43rd Guikha Rifles, holds temporary civil medical charge of the Manipur State.

THE services of Lieutenant-Colonel H K McKay CIE, I M S, are placed temporarily, and the services of Colonel W R Browne, M D, I M S, are replaced permanently, at the disposal of H E the Commander in Chief in India.

THE services of Captain A Miller, M B, I M S, are replaced temporarily at the disposal of the Government of Madras. The services of Captains J Entrican, M D, G H Stewart, H A Williams, M B, D S O, and Lieutenant Good, M B (all I M S), are placed temporarily at the disposal of the Government of Burma.

LIEUTENANT COLONEL F S PECK, I M S, is granted six months' leave, and Major A H Nott, M B, I M S, acts for him as Professor of Midwifery, Medical College, and Obstetric Physician and Surgeon, Eden Hospital, Calcutta.

THE services of Captains J W D Megaw, M B, and M H Thornley, and of Lieutenant W V Coppinger, M D (all I M S), are placed temporarily at the disposal of the Government of Bengal. The services of Captain D N Anderson, M B, and of Lieutenant A Chalmers, M B (both I M S), are placed temporarily at the disposal of the Government of Madras. The services of Captain C F Weinman, M B, I M S, are placed temporarily at the disposal of the Chief Commissioner, Central Provinces. The services of Captain F H Watling, M B, I M S, are replaced at the disposal of H E the Commander in Chief in India.

LIEUTENANT O ST J MOSES, I M S., is appointed to the officiating medical charge of the 5th B C

CAPTAIN O J WEINMAN, 49th Pioneers, has obtained furlough for one year

LIEUTENANT L. COOK, I M S., is appointed to the officiating medical charge of the 11th Rajputs

ARMY BEARER CORPS.—Under the new organisation of the Army Bearer Corps, men of the Corps are enrolled and attested under the Indian Articles of War. They are subject to military discipline and any breach of discipline should be dealt with in the ordinary way by the medical officer under whom they are serving, or the case should be reported to the Principal Medical Officer of the District for disposal. They are entitled to receive the same consideration as is accorded to sepoy, or to enrolled and attested followers of the Army Hospital Corps and Army Transport Corps, and unauthorised punishments, or the use of personal violence to the men, by subordinates should be strictly forbidden.

LIEUTENANT COLONEL W K HATCH, I M S., of Bombay, has contributed the article on Mycetoma in the *Encyclopedia Medica*

CAPTAIN R H MADDOX, I M S., is appointed to act as Civil Surgeon of Darjeeling, while Captain G Y C Hunter, I M S., Medical Officer in charge of the troops at Ranchi, takes over the duties of Captain Maddox as Civil Surgeon, in addition to his own duties.

CAPTAIN O THOMSON, Officiating Superintendent, Central Prison, Benares, has been granted sixteen months leave, and Captain W S Willmore, I M S., is to act for him

MAJOR J M CRAWFORD, I M S., is posted to Naini Tal as Civil Surgeon

CAPTAIN G HUTCHESON, I M S., goes on plague duty from Meerut to Lucknow

CAPTAIN J N WALKER, I M S., is appointed to act as Civil Surgeon of Meerut, vice Lieutenant-Colonel J C C Smith, I M S., on leave

THE Governor General in Council is pleased to sanction the grant to Royal Army Medical Corps officers on the Indian establishment of the following increased rates of pay, etc., with effect from the 24th November 1902—

(1) Pay

Lieutenant	Rs 420 a month
Captain	475 "
" over 7 years' service	530 "
" over 10 years' service	650 "
Lieutenant-Colonel	1,150 "
" " selected	1,250 "

2) Charge allowance to the Senior Medical Officer in charge of station hospital

300 beds or more	Rs 240 a month
200 " "	180 "
100 " "	120 "
50 " "	60 "

(3) Specialist pay, at the rate of Rs 60 a month, to officers below the rank of Lieutenant Colonel, who may be appointed to post such as would entitle them to specialist pay under paragraphs 36 and 41 of the report of the Right Hon'ble Mr Brodrick's Committee

THE Government of India have sanctioned the provision of wire gauze doors for all hospitals of British and Native troops in India.

At Quetta and other stations where wire gauze doors are not likely to be required at certain seasons, they should be so made as to be capable of being lifted off their hinges and removed to a place of safety when not required.

Sanction has also been accorded to the provision of wire gauze covers to windows other than clerestory, in the special wards of station hospitals in the Punjab Command

CAPTAIN T H DELANY, I M S., is appointed to act as Civil Surgeon of Shahabad

THE services of Lieutenant R. McL Dalziel, M B I M S., are placed temporarily at the disposal of the Punjab Government for employment in the Jail Department

LIEUTENANT N S WELLS, I M S., 43rd Gurkha Rifles, is appointed to hold civil medical charge of the Manipur State in addition to his military duties

LIEUTENANT T S B WILLIAMS, I M S., 33rd Punjab Infantry, officiates as Civil Surgeon and Superintendent, Lunatic Asylum, Jubbulpore, during the absence of Lieutenant Colonel W A Quayle, I M S.

LIEUTENANT COLONEL J L POYNTER, I M S., has been granted an extension of six months' leave on medical certificate

MAJOR W B LANE, I M S., has been appointed Superintendent of the Jubbulpore Central Jail

CAPTAIN A B FRY, I M S., is in charge of the civil medical duties of the Kohat District, and Lieutenant R J Bradley, I M S., is in charge of the same duties at Mardan

THE War Office have ruled that such officers of the Royal Army Medical Corps, as will not have the opportunity of going through the senior course at the Royal Army Medical College, and who desire to be recognised as specialists should present themselves for examination in their special subject at the examination which will be held at the end of the senior course at the college

The next examination will be held in July 1903

CAPTAIN H INNES, I M S., is appointed Deputy Sanitary Commissioner, Northern Bengal Circle.

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co Calcutta.

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BOOKS, REPORTS, &c, RECEIVED

- 1 The Geography of Disease By I G Clomow M D (Edin) D R N (Camb.) The Cambridge University Press 1903 Price 10s
- 2 Legal Medicine (in India) and Toxicology Illustrative Cases Vol II By Major Collis Barry, I M S F R S E F I C Thacker & Co Ltd, Bombay, 1903
- 3 Annual Report of the Sanitary Commissioner with the Government of India for 1901. Superintendent of Government Printing India, Calcutta. Price Rs 8
- 4 List of Qualified Medical Practitioners in Bengal, 1903 Bengal Secretariat Press Calcutta. Price Re 1-4
- 5 Dispensary Returns of the Province of Assam for the year 1902
- 6 The Countess (of Dufferin's Fund 17th Annual Report of the Bengal Branch, 1902 Bengal Secretariat Press, Calcutta.
- 7 Government of Bengal Report on the Administration of Bengal, 1901-1902 Bengal Secretariat Press. Price Rs 6
- 8 Report on Sanitation Dispensaries and Jails in Rajputana for 1901 and on Vaccination for 1901-1902 Office of Superintendent of Government Printing India, Calcutta 1903 Price Re 1
- 9 Report on the Political Administration of the Central India Agency for 1901-1902 Superintendent of Government Printing, India, Calcutta, 1903 Price Re 1

LETTERS, COMMUNICATIONS, RECEIVED FROM —

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Original Articles

A NEW FIELD-SERVICE DOOLY

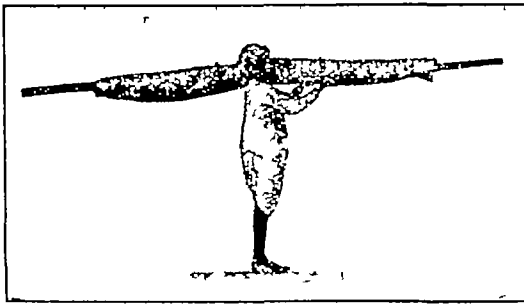
BY LIEUT COL. C M THOMPSON, M B , B Ch ,
I M S ,
Staff Surgeon, Secunderabad

THE dooly is specially designed for the purpose of quickly removing wounded from the firing line and bringing them to the field hospital or camp, when troops are engaged in broken uneven ground, such as is so frequently met with on the North-West Frontier, Tirah, or in Afghanistan, or for carrying wounded or sick on the march over broken ground without roads,

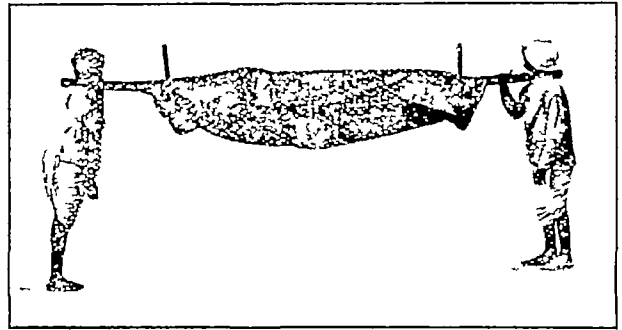
Sir George Pretymann, K.C.M.G., and other officers who have inspected the dooly, given effect to, the weight will be considerably reduced. As it is, the dooly can be easily carried packed up on the shoulder of one man, as can be seen from the accompanying photographs.

(b) Its portability when packed up it can easily be carried on the shoulder of one man, one pony or mule can easily carry five doolies as a load.

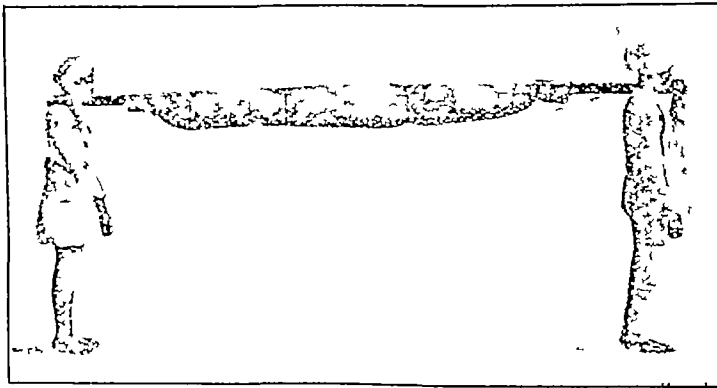
(c) Its comfort the position of the sick or wounded man can be frequently altered, and the extreme unpleasantness of being carried in a dooly thereby much relieved, and by the arrangement of straps a wounded or fractured limb can be placed in the most comfortable and suitable position.



Showing the lightness of dooly



Dooly with man in it, ready to be carried over broken ground



Dooly packed up ready for transport

such as was experienced in the march down the Bara Valley in the late Tirah Campaign. The dooly is not intended to take the place of the present dooly for work over level roads on the lines of communication, but in my opinion has many advantages for work at the front over uneven ground, broken up by deep nullahs and without roads.

The following are the points in favour of my dooly —

(a) Its lightness as compared with the present dooly—its weight is 49lbs as compared with 75lbs, the weight of the present dooly. When the cross bars are made of aluminium, and certain slight structural alterations suggested by

advantages

(g) It can be used in camp to form an extremely comfortable and healthy cot, protected as well from cold and wet as from the heat of the sun.

(h) Its cheapness the dooly can be made for between 25 to 30 Government rupees.

Three photographs of the dooly are attached, one showing how it can be carried on the shoulder of one man, a second when it is ready for work at the front, and a third when it is raised for carriage over broken ground and containing a patient.

The dooly consists of a strong canvas bed supported at each end from a metal bar passing

through the bamboo pole, and by four straps swinging from metal cross-bars, fixed on to the bamboo pole by strong iron pins, which pass through the bamboo and are fastened by a nut on the lower surface.

The bamboo pole is $3\frac{1}{2}$ inches in diameter and 12 feet 3 inches in length. The metal supports at each end can be raised or lowered by pushing them up through an opening in the bamboo, which is bound with a strong iron ring where the metal rod passes through, and is supported in any position by passing an iron pin through the holes in the rod above the bamboo. The body of the canvas bed is supported by leather straps, which pass from one side of the cross-bar underneath the canvas, and each strap can be raised or lowered simply by hooking the straps in a higher hole. A strong leather band passes right round the lower surface of the canvas bed, and it is on this leather strap that all the weight of the dooly and its contents is borne, so that there can be no tearing of canvas. The top covering consists of strong canvas with straps attached for packing the dooly up. The top covering is kept in place by having two leather-bound holes at each end, through which the end metal supports pass.

To pack the dooly up, the cross-bars are turned round, so as to be in line with the bamboo, the canvas bed rolls round the pole, and the whole is firmly strapped together in the top canvas covering, which acts as a *salletta*, as can be seen from the accompanying photographs.

During the late Tirah Expedition I was much impressed by the unsuitability of the present pattern dooly for work over broken and uneven ground, and the possibility of designing a more suitable vehicle for the conveyance of sick and wounded on the march, over difficult and broken ground occurred to me shortly after our arrival at Bala Fort.

The sad experiences of the 2nd Division during the memorable march from Bagh to Fort Bala in December 1897, conclusively proved how unsuitable, in every respect, the present dooly was for carrying wounded or sick over broken ground, it was found to be quite impossible to carry the dooly over deep nullahs and down steep inclines, owing to the lowness of the floor of the dooly, which kept constantly bumping against the ground. When the dooly had to be taken over a nullah the usual procedure was for the front Kahars to turn round and go slowly backwards down the side of the nullah, raising the pole of the dooly as high as they could to prevent the bottom scraping along the ground. This manœuvre had to be constantly repeated and consumed a lot of time, when time was valuable, and caused great delay.

As will be seen from the accompanying photographs, the principle underlying the design of my dooly is to keep the wounded man as high up close to the pole of the dooly as possible,

and by arrangement of the straps, to prevent his falling out even when the dooly be inclined at an angle of 45° . I have proved by experiment that a heavy European can be carried in my dooly with ease by two bearers over the rampart of the Secunderabad Mud Fort. To accomplish this the pole of the dooly had to be inclined at an angle of 45° . I am strongly of opinion that this dooly, if given a trial at the front, will be found to have many advantages over the present pattern dooly, for operations over uneven rough country.

RED WATER AND RINDERPEST IN CATTLE

By STEWART STOCKMAN, C V D, INDIA

In September of 1902 I received from my friend Mr Gray, Principal Veterinary Surgeon in Rhodesia, a copy of his interesting report on "Red Water Disease in Rhodesian Cattle." During the last two months, February and March, 1903, I have investigated a similar disease at Ongole, Madras, under circumstances which leave no doubt that I had to deal with a combination of Rinderpest and Red Water (Texas Fever). Since coming to this conclusion I have obtained and re-read Mr Gray's report, as well as those of Messrs Robertson and Watkins-Pitchford.

In view of the conclusions come to by these gentlemen that the Rhodesian Disease is nothing else than a severe form of Red Water, I do not presume to establish its identity with the one I am about to describe. The similarity, however, is so striking as to be of great interest, and it is certainly important to know that the two diseases can and do sometimes run concurrently in the same animal.

At the outset I would like to recall the well-known fact that in India, where rinderpest is enzootic, a very large percentage of the plains cattle take the disease in a relatively mild form, and recover. One can only make *post-mortem* examinations on those which have had an acute attack ending in death, and it is on the lesions found in the latter cases that the general idea of the *post-mortem* appearances of rinderpest are based. It is only reasonable, however, to assume that the lesions of the stomachs and bowels, so serious of themselves in the virulent forms, are neither so well marked nor so typical in the milder and non-fatal cases. That has been my experience in a very few mild cases, in which accident has enabled me to hold a *post mortem* examination.

On the 16th February, at Belhampur (Ganjam), blood was withdrawn from an animal, No 18, then suffering from a severe but non-fatal attack of experimentally produced rinderpest. No 18 was one of a lot of 40 cattle which I had had under my personal supervision for two months.

Two Veterinary Assistants had examined them twice daily during the same period, and attendants had been with them both day and night. No symptoms of Red Water occurred amongst them, nor was the disease known in the district.

The blood was defibrinated and despatched on the same day (15th February) to Ongole, a distance of 475 miles.

On the morning of the 16th two young cows, 42 and 43, and two young buffaloes, 44 and 45, were each inoculated at Ongole with 3 c.c. of this blood to provide virulent material for serum-testing at a later date. All four animals developed rinderpest, but it is only with cow 43 that this report is at present concerned, as of the four she alone developed Red Water.

On the 21st February she showed distinct symptoms of rinderpest. As the ulcers in the mouth and nostrils were well developed on the 24th, about half a litre of blood was withdrawn from the jugular vein. This blood was defibrinated and inoculated in a lot of 20 cattle which had been injected a fortnight previously with varying doses of anti-rinderpest serum. Three control animals which had received no serum were inoculated at the same time. The dose of virulent blood given was 4 c.c. in some cases and 1 c.c. in others. Lest it be supposed that the animals which had received the protective serum were immunized against rinderpest, I may state at once and emphatically, (1) that the doses prescribed were much too small to produce immunity, (2) that the same doses of serum had been proved quite inadequate at Berhampur, (3) that nearly all the animals de-

(5) that the attack of rinderpest induced in the three controls which had not received any serum was even less severe than in some of the animals to which serum had been given.

On the 26th February (two days after blood had been withdrawn and inoculated in others) No. 43 was noticed to pass red urine, and this continued up to the 27th.

As the necessary reagents were not at hand, no examination of the blood was then made.

The urine, however, was found to be highly albuminous, and the sediment thrown down by a small centrifuge showed under the microscope red blood corpuscles, pigment, and epithelial cells from the bladder. This pointed to the possibility of rinderpest ulcers having formed in the bladder, but the idea was negatived by absence of straining and sudden cessation of the symptoms on the 27th.

Inquiry elicited from the natives that they were well acquainted with Red Water Disease, but that it did not usually appear so early in the hot weather. They also said that a considerable number of the affected cattle died, and that it was much less commonly met with in buffaloes. They attributed it to the eating of indigo, which, of course, is incorrect.

A careful watch was kept on the experimental animals inoculated with the blood of No. 43, as it was only reasonable to suppose that they had received into their bodies the parasite of Red Water. The following table gives particulars of those which developed this disease, and be it noted that in every case the rinderpest symptoms appeared first —

	NO. OF ANIMALS									
	22	23	28	29	30	33	39	48	49	50
Dose of serum per 600 lbs	5 c.c.	5 c.c.	7 c.c.	7 c.c.	9	9	14	None	None	None
Dose of virulent blood on 24th Feb	4 c.c.	4 c.c.	1 c.c.	4 c.c.	4 c.c.	4 c.c.	4 c.c.	1 c.c.	4 c.c.	5 c.c.
Severity of rinderpest symptoms induced	Well marked	Well marked	Well marked	Well marked	Medium	Medium	Well marked	Well marked	Well marked	Well marked
Date of appearance of red water	6th March	5th March	6th March	5th March	3rd March	5th March	4th March	4th March	6th March	7th March
Date when red urine ceased	7th March	7th March	8th March	8th March	5th March	8th March	6th March	6th March	8th March	9th March
Remarks					Very anæmic			Control	Control	Control
Result	Recovery	Died 7th March	Recovery	Recovery	Died 5th March	Recovery	Recovery	Recovery	Recovery	Recovery

veloped severe clinical symptoms of rinderpest, (4) that the blood of some of them was successfully used to communicate rinderpest to seven young buffaloes which did not contract Red Water (these buffaloes will be referred to again)

It will be seen from the above that ten animals out of the twenty-three developed Red Water after being inoculated with blood from animal 43, that the condition in most of them lasted two days, and that two animals died. Since the

disease appeared about the same time in all, and since it is well known to be inoculable, it might reasonably be concluded that animal 43 was responsible for its appearance. I may also mention that the period of incubation (eight to ten days) is quite in accordance with experimental facts, that all the animals were wonderfully free from ticks, the intermediate source of infection, and that No 43 was never within 300 yards of the others after coming to the experimental station. On the other hand, however, it is possible that the rinderpest infection kindled the smouldering parasitic disease in 43 and in the others, for it is well known that in districts where Red Water Disease is enzootic as is apparently the case at Ongole, the indigenous cattle develop a high degree of immunity. They may harbour the parasites in their blood without showing signs of ill-health until something occurs to give the disease a fillip, as it were. Why the other thirteen animals did not take the disease can only be explained by supposing that they were immune to Red Water, or that they never had the parasites in their blood. The latter explanation would, of course, do away with the idea that animal 43 was the starting point of the disease, but it seems to me impossible on the evidence to pronounce definitely on this question. As red urine is not by any means a constant symptom of the parasitic blood disease, it might be suggested that the other thirteen animals were also affected. As long as I had them under observation, however, they showed none of the other symptoms, such as rapid wasting and anæmia.

Cover-glass preparations were made from the blood of several affected animals. These were fixed in absolute alcohol containing 1 per cent of formalin and afterwards stained by eosine and methyl-blue. In all the preparations from sick animals the parasite of Red Water—*pyrosoma bigeminum* of Smith and Kilborne—was found inside the red cells. In no case, however, could it be said that the parasites were numerous, which is not surprising, seeing that the blood was examined after many of the affected red corpuscles had been broken up. All forms of the parasite were found,—pear-shaped bodies, rods, and rings. They were also found in the spleen-pulp of two animals after death. Veterinary-Major Gunn, who came to Ongole just after the Red Water Disease had appeared, expressed himself as convinced that the cattle all showed marked clinical symptoms of rinderpest, and at the same time confirmed my diagnosis of Red Water.

He was present at the *post-mortem* of No 30, and we were agreed that the lesions of the fourth stomach and bowel were those of rinderpest.

Appended are the *post-mortem* appearances of Nos 30 and 23. It will be seen how closely they resemble those described in the Rhodesian cattle, and that they are what one might

expect to find in animals dead of rinderpest plus Texas fever.

Both animals showed oligocythæmia in a marked degree. In No 30 the red cells had fallen to 1,200,000 per c in the evening before death (normal 6,000,000), and the hæmoglobin was reduced to 50 per cent of the normal (Gowers' scale).

	30	23
Age	2 years	1½ years
Sex	Cow	Cow
Mouth and nostrils	Ulcers on gums, lips and in nostrils. Had a medium attack of rinderpest.	Well marked rinderpest, ulcers in mouth and nostrils. Had a medium attack of rinderpest.
Blood	Microscope showed parasites in red cells. Very watery. Red cells day before death were reduced to 1,700,000 per c m.	Watery, but clots present in large veins.
Lungs	Yellow, œdematous, distended, contained a frothy fluid.	Distended, yellow in colour, contained much frothy fluid, emphysematous.
Pericardium	Contained abnormal amount of red serous fluid.	Abnormal amount of fluid of a red colour and a red gelatinous clot.
Heart	Flabby, yellow in colour, contained no clots.	Fairly firm, paler than normal, contained firm clots and much serous fluid of a red colour.
Liver and gall bladder	Swollen, firm and very yellow. Gall bladder showed many small ulcers.	Firm and very yellow in colour. Gall bladder contained bile of the consistence of tar. Membrane showed many small ulcers.
Spleen	Swollen, pulp normal in consistence, but darker in colour than normal.	Slightly swollen, pulp darker than normal.
Kidneys	Firm and of normal appearance, but when cut contained red fluid.	Firm and of normal appearance to naked eye.
Bladder	Distended by a coffee-coloured fluid, mucous membrane normal, urine contained albumen, red cells, epithelial cells and much pigment.	Distended by albuminous urine of a coffee colour.
Stomachs	First three normal, fourth showed many hæmorrhages into mucous membrane and several well marked ulcers right up to pylorus.	Omentum showed gelatinous hæmorrhages, 1st contained foul smelling ingesta. Second, normal. Third, contents very dry and hard. Fourth, numerous small hæmorrhages on membrane and ulcers up to pylorus.

Small bowel	Congested, ileum showed well marked ulcer and diphtheritic exudates	Duodenum congested and slightly ulcerated. Ileum showed diphtheritic exudate and many small ulcers on membrane
Glands	Throughout swollen and œdematous	Swollen and œdematous throughout body
Large bowel	Petechial hæmorrhages on membrane, especially in rectum	Colon showed petechial hæmorrhages, and a few small ulcers on membrane. Rectum one small hæmorrhage high up on membrane
Genital organs	Few small ulcers on vaginal membrane	Normal

It seems almost absurd to question the co-existence of rinderpest and Red Water in the above cases, but in view of the statement by the veterinary authorities in South Africa that similar intestinal lesions may result from Red Water, it was highly important to remove all doubt on the subject, especially as the animals were under experiment for testing the protective value of anti-rinderpest serum. The following experimental evidence, I think, will settle the question as regards the Ongole animals. It has already been mentioned that the natives about Ongole stated that buffaloes were much less frequently attacked by Red Water than cattle. The natural assumption is that the buffaloes are less susceptible, because they are equally liable to tick infection.

Experiment 1—On 2nd March seven young buffaloes (1½-8 years) were inoculated (for another purpose) with 1 c c of blood from control animal 48, which was then showing what to all appearance were distinct clinical symptoms of rinderpest of four days' standing. No 48 developed Red Water two days after wards, and it may be safely assumed that the pyroplasm was in the blood at the time of withdrawal. Six of the said buffaloes took rinderpest in a marked degree, but none of them developed symptoms of Red Water.

One animal, G, was killed eight days after the first appearance of symptoms. The lesions found in the mouth, fourth stomach, and bowels were beyond doubt those of rinderpest, and they were almost identical to those found in animals 30 and 23. All the *post-mortem* appearances, however, of Red Water, such as swelling of the spleen, jaundice of the tissues and liver, and red urine in the bladder were absent in the case of animal G.

Buffaloo D died of rinderpest thirteen days after inoculation. The *post-mortem* appearances were similar to those found in G, except that they were more marked. There is no doubt, then, that the blood of cow 48 infected these seven buffaloes with rinderpest, and the presence of the pyroplasma in her blood, coupled with

the symptoms of hæmoglobinuria, established the diagnosis of Red Water.

Experiment 2—On the 7th March two young buffaloes 44 and 45 were inoculated with 5 c c of blood from animal 49, then in full attack of Red Water and rinderpest. These two buffaloes had been used for the up-keep of virulent rinderpest blood brought from Behampur. Both had suffered from a well-marked attack of the latter disease, from which they had recovered. All trace of ulcers in the mouth and nostrils had disappeared, and it may be safely asserted that the buffaloes possessed an active immunity against rinderpest. These two animals, as was expected, took neither disease. They had been experimentally immunized against rinderpest, and probably possessed a marked degree of natural resistance to Red Water. The evidence furnished by these two sets of experiments of themselves is, of course, only negative as regards Red Water though positive as regards rinderpest. Positive evidence of the presence of Red Water, however, has already been given, but it still remained to inoculate the disease in an animal which would not take rinderpest, and establish the true nature of the bowel lesions.

Experiment 3—New heifer H, 1½ years old, was obtained from a village three miles from Ongole. On the day of her arrival she received 100 c c of anti-rinderpest serum under the skin of the shoulder, and at the same time 8 c c of blood from animal 50 were injected in the region of the neck. Animal 50 was in full attack of Red Water, and had also an attack of rinderpest of nine days' standing. Cover-glass preparations made from the blood of 50 at the time of withdrawal showed the red cells to contain the pyroplasma. Three days after the first injection (100 c c of serum) other 60 c c were given to H. One might fairly expect then that H had been endowed with a high degree of temporary immunity against rinderpest. On the fourth day after the blood had been injected the pyroplasma was found in a few of the red cells in preparations of blood taken from the ear of H. On the fifth day H was observed to be sick, the temperature rose to 40.1 C, the appetite was suppressed, and the bowels constipated, but there was no eruption in the mouth or nostrils. On the sixth day her condition became worse, the temperature fell to 35.8 C, she was unable to stand, and died the same day. No red urine was passed.

The *post-mortem* revealed none of the lesions indicative of rinderpest, ulceration and diphtheritic inflammation of the stomach and bowel were absent. There was no œdema of the lungs. The pericardial sac contained an increased quantity of fluid of a very yellow colour, a gelatinous clot was also present. The heart muscle was paler than normal and the cavities contained clots. The liver was swollen and very yellow in colour, the gall-bladder contained

thick bile, which was also present in large quantity in the duodenum. The spleen was enlarged. The kidneys were little altered, but the bladder contained a very yellow bile-stained urine, its mucous membrane was normal.

As I had to leave Ongole two days before the death of H in order to proceed to the Transvaal, I am indebted to the Veterinary Assistant for the particulars of the *post-mortem* examination, which from a pathologist's point of view, at least, is incomplete. It is regrettable that time did not permit me to continue the experiments on cattle immunized against underpest. At the same time it is my belief that H died of Texas fever. The *post-mortem* appearances point to that, and I had discovered the parasite in her blood before leaving Ongole. The period between inoculation and death, six days, is certainly short, but it is to be noted that a large dose (8 c c) of infective blood was given. Ligniere, who has done many experiments in the Argentine on Red Water, states that some of the cases ended fatally in six days when large doses (5—10 c c) of virulent blood were injected.

The absence of red urine in a case so acute as this is more difficult to explain, but this point may be cleared up by Veterinary-Major Gunn who, I understand, purposes continuing experiments on Red Water.

INDIAN MILK SUPPLY AND INFECTIVE (EPIDEMIC) DIARRHŒA

By D SIMPSON, M B,

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So much attention has been paid to milk lately in England as a cause of disease, especially in connection with epidemic diarrhœa in children, that it may be considered an opportune moment to compare *generally* the conditions of milk supply in India and see how the conclusions reached at home may be applied to the latter. I refer here distinctly to the *general conditions* of milk supply in India, and not to any dairies under English management that may exist. It will be useful to give here, side by side, (1) the description of an ideal cowshed in America as given by Rotch himself before the Section of Diseases of Children at the meeting of the British Medical Association at Manchester last year, (2) the description of the cowshed of a model dairy worked on commercial lines in England as given in the present serial report on the milk supply of large towns by the British Medical Journal, (3) a description of the average Indian cowshed.

(1) *American*!—"This means a building with cemented walls, ceilings and floors, having no connection with sewer pipes or drain pipes, and a cement gutter filled with absorbent waste and extending behind the stalls, so that

the gutter can be thoroughly washed out with the hose a number of times a day. There should be drinking water in each cow's stall and the food, such as hay or corn, is not to be kept in the same building with the cows. The cows in our model stables are kept from lying down until after they have been milked by a peculiar contrivance at their head, thus avoiding dirt. A barn is needed for cows which are to be used for infant feeding, which will allow each cow at least 1,200 cubic feet of fresh air. There is the most careful supervision of the cow's health, and with the slightest indisposition or rise of temperature the cow is removed to a clean isolated barn a long distance from the cowhouse and kept there until she is considered to be in a perfectly normal condition by the Veterinary Surgeon. Careful microscopic examination of the milk is made on these farms for the purposes of detecting the re-appearance of the colostrum corpuscles, or any pernicious micro-organisms, such as streptococci, or the presence of pus corpuscles, more than five pus corpuscles to each field given by a $\frac{1}{12}$ th inch oil immersion lens contraindicating the milk for the time being for infant feeding." The milk-room itself, which is some hundreds of yards distant from the cowshed, is in its scrupulous cleanliness in accord with the latter—ceiling walls and floor being of polished cement, ventilation being carried out by a fan in such a way that neither dust nor flies can enter, while the milk itself is received into sterile jars kept in ice water after first passing over sterile cooling pipes.

(2) *English*!—"The walls are faced with glazed white tiles, a small black slate being inserted opposite each cow's stall for the purpose of calling the attention of the Veterinary Surgeon to any animal which may be thought to require particular inspection. Against the wall are also two porcelain washing basins. These are for the milkers, who wash their hands after milking each cow. This is excellent as a precaution against conveying infection from one cow to another, and for ensuring general cleanliness. The milkers wear white linen jackets and oilskin caps, the latter as their heads are bound to touch the cows while they are milking, and oilskin is easily washed. The cows stand in a single row down the centre of the shed, the floor sloping slightly to an open drain which flows through a gully into a tank at a distance. The overflow from this tank is into the public drain. The litter used is straw, which is cleansed and made up twice a day. In front of the stalls is a long trough formed of glazed half-drain pipe of large diameter, and in this the animals are fed and watered twice a day." The conditions of the dairy itself are correspondingly clean and in accordance with model dairy methods, though not perhaps up to the refinements of the American ideal dairy. The

milk is first strained, then passed through a refrigerating apparatus and run directly into the churns for distribution, which are closed and sealed. The churns are cleansed in soda and water, scrubbed by revolving brushes, inverted and rinsed by an upward stream of boiling water and finally sterilized by steam under pressure.

Such dairy companies are very particular amongst other things about the water-supply, both for drinking and cleansing purposes, before accepting the milk produce of any farm that is offered to them. The water has to be passed both by the medical officer of health and the company's analyst, and on the occurrence of any infectious disease among the family or servants of the vendor, a heavy penalty is inflicted in the event of concealment, while if the same is notified the company sees that the vendor suffers no loss on this account.

As might be expected, the dairies inspected were not at all uniformly managed in this perfect condition, and the writer of the report mentions an instance in which there were modern appliances, good water-supply, and healthy situation, yet owing to careless and incompetent managers the cows were badly kept and the milk "tainted with manure, hairs and dust and turned into doubtfully clean vessels." This only shows the stringent and perpetual supervision required in connection with all milk supplies, even when on a much smaller scale than is here referred to.

(3) *Indian*—In order to describe an Indian cowshed accurately, I inspected one, so that I might have its appearance clearly before me, but it was so bad that I thought I must have struck an exception even of this class. I therefore, subsequently, visited a number of others but found little difference, and that they were all much alike in this respect. The Indian cowshed gives scope for description, and I doubt whether I could do it justice, so I shall only briefly describe two of those which I visited in a large European community. They are places not often seen by Europeans, to which the amazement of the milkmen at my visit testified. At one place, the shed consisted of a low-roofed building made lower inside by an attempt at forming a ceiling of old wood and rubbish, so that there was little more than room for a person to stand up. It was divided up by a partition into two divisions, each of which had a hole in the wall for ventilation. In the one, which measured about 12 feet by 10, were three buffaloes and a cow, and in the other division, which was about 15 feet by 10, were three cows, three calves, and some sheep. The floor was no floor, but simply consisted of rough stones placed any how, and therefore very uneven, with a great deal of cow dung lying on the crevices of the uneven surface, which could not be removed, and the whole saturated with liquid

refuse, the excess finding its way between the stones to a hole at the foot of the wall, where it flowed into a cesspool immediately outside, the bottom of which I should think rarely, if ever, saw light. The floor of this shed had had its usual morning clearing, otherwise it could not have been visible at all. A tubful of yellow fluid near the door was the water-supply. The other milkman's premises consisted of two cowsheds at either side of his own dwelling with some small places for sheep sandwiched in between. One shed measured roughly about 24 feet by 12, and contained five cows, three buffaloes and four calves. It had not yet been cleared out, and consequently, as may be imagined, the animals were standing in heaps of manure, and this too, long after milking time. Out of the other shed, which measured about 40 feet by 8, with a low sloping roof, came 8 cows miserably thin and dirt-begrimed. Near this milkman's premises lay a young calf thin, sickly, and unable to stand, with a large tumour under its jaw. There were flies everywhere in any numbers, settling and rising at each step taken, and the atmosphere of the shed was staggering. There was a running stream of water close at hand but greatly discoloured, there being other milkmen's premises near by.

It should be noted, (1) that calves are often kept along with the cows at night, and are necessarily drawing at the teats, and probably often cause mastitis, considering the wretched condition of the calves. (2) The cows are milked in the early morning in the cowsheds, standing in this indescribable condition of dirt, and in an atmosphere that is necessarily very foul, and swarming with flies, consequently milk drawn under such conditions cannot but receive contamination there and then. (3) Every milkman also keeps a certain number of buffaloes, which he always declares are for supplying milk to natives, who prefer buffalo milk, but it is also very likely the case that buffalo milk is added to cows' milk when the latter falls short of the required amount, and, apart from the undesirableness of the mixture, buffaloes have a fondness for wallowing in mud pools which is very objectionable. Now municipalities can do very little to improve the conditions under which cows are kept inside their bounds, except as regards the general sanitary condition of the surroundings of the sheds, which, however, would not reach the evils inherent in the manner in which the cows themselves are kept, and in the customs of Indian milkmen. The Municipal Act is too narrow in its scope, and too limited in its powers to deal with this matter, drawn up as it is for native communities, among whom cows are often kept in the verandahs of the houses. Besides, if the milkman's customers are indifferent as to the source of supply and its attendant risks why should he make any change in his ac-

customed ways? The milkman's craft like that of the dhobie's is hallowed by custom, and new arrivals of Europeans follow the groove of their predecessors without question. In one respect, however, municipalities should be empowered to prevent overcrowding of animals in sheds in which matter the Chairman could be allowed to exercise his discretion.

It will be useful to note the usual arrangements for the actual supply of milk, as it is in connection with these that the incidence of certain diseases must very often lie.

(a) Where persons own, or receive, one or more cows from the milkman and keep them on their own premises, the owner or milkman arranges for their feeding. This is the only safe plan, and though under any circumstances it is superior to the other two plans, still supervision in housing and feeding is required to ensure safety.

(b) The next best plan, and one which is a good deal in vogue, is the arrangement by which cows are brought to the house, daily milked and taken away again by the milkman, perhaps remaining to graze during the day until evening. Many people adopt this plan from necessity for want of sheds in which to house the cows, recognising the state in which they otherwise must live, others for the reason that they consider that it is quite enough if they only have the cows brought to the house and see them milked, but though this plan does avoid a great deal of the contamination to milk at the milkman's cowshed, it should be remembered, as pointed out, that they are kept in an overcrowded shed of the dirtiest description, breathing the foulest atmosphere, and with half-starved calves—perhaps unhealthy—pulling at their teats. It is little wonder then that cows become sick, at times producing inexplicable attacks of diarrhoea.

This, however, is the system that has of necessity to be adopted at all hospitals and such like establishments of any size in India, for the simple reason that it would be impossible to house a herd of cows for this purpose, except in the form of a connected dairy farm. This important step is now to be taken for the garrisons of British troops who will be supplied by adjoining Government dairy farms. This under any circumstances must give the very material advantage of having cows properly housed, fed and provided with a proper water-supply, and therefore superior in these respects to any other sources now existing, but even with such conditions as seen in connection with English dairies, safety from the incidence of disease by milk can only be ensured by persistent supervision of every thing at the farm and in distribution afterwards. The conditions required in the manipulation of milk to ensure absolute freedom from contamination are practically those for aseptic surgery. But for general and municipal hospitals there still remains of necessity the old state of matters. Where the

contact is large enough it might be possible to impose as a condition of the acceptance of the contract, the inspection at any time of premises where cows are kept at night and the compliance with some very obvious necessities as to housing. But the milkmen are masters of boycotting, and have to be warily dealt with.

(c) The third and most common custom is for the milkman to bring milk from his own place to his customers in bottles, which are left, and the empty bottles of the previous day taken back. It is needless to say that this system is as bad as it can be and essentially dangerous, for the cows are milked in the early morning in their sheds in the condition they have been in all night without any cleaning up the vessels into which the milk is drawn are dumped down anywhere, until the whole quantity required is ready, which is then poured into tins, but more usually bottles which have been rinsed with the nearest available water and that in itself must prove a fruitful source of contamination. Besides, customers themselves often neglect to rinse out these bottles before returning them, which, as a matter of fact, ought to be done with boiling water the moment the bottle is emptied. I met one milkman—the owner of many cows and a large supplier—returning with a basketful of bottles on his head which had contained the previous day's supply. These smelt sour from small quantities of milk still remaining in them, having evidently not been washed out, this, however, the milkman said he would do himself, and, with the best intentions, I have no doubt he did, only substituting dirty water for dirty milk. This, however, is the mode of distribution most commonly adopted in India, and, even after distribution, whether obtained directly or brought by the milkman, the method by which milk is kept in Indian houses is generally most faulty, allowing often the free access of dust and flies which have been conclusively proved by the experiments of Firth and Horrocks to be carriers of infective material. It is curious how little attention is bestowed on milk—the most unstable of all goods—as compared with the fastidiousness often shown regarding other foods.

Having seen the ease with which contamination of milk can occur in India, or rather the impossibility almost of its not occurring, it is interesting to note the results of recent bacteriological investigation in this direction with reference to diarrhoea of the type of "Epidemic Diarrhoea" in England, and apart from the subject of zymotic diseases and their relation to milk as a medium.

Attacks of diarrhoea due to milk have hitherto generally been set down to the noxious effects of the lactic, butyric or such like fermentations,*

* Klein has, however, shown that the *B. coli communis* is also a fermenting and curdling agent in milk.

leading afterwards perhaps to proteid decomposition with aggravated symptoms, and though this still holds true, yet with regard to certain forms of diarrhoea of the type of 'summer' or 'epidemic diarrhoea,' it would appear that the real cause is often faecal contamination by which are introduced into the bowel either the *Bacillus Enteritidis* Sporogenes of Klein, or bacilli of the colon group. The latter is the conclusion arrived at by Professor Delépine³ of Manchester, who has been investigating the bacteriological aspect of outbreaks of food-poisoning, and the pathogenic properties of cows' milk for the past eight years. He considers that the *B. coli* communis (Escherich) and the *B. enteritidis* (Gaertner) are extreme types of the bacilli that are the agents at work in outbreaks of 'epidemic diarrhoea,' and that the virulence of several of the bacilli varies considerably, the varieties of the bacillus of Gaertner being most important. He does not consider Klein's bacillus to be such a frequent cause as the colon bacillus and its pathogenic varieties, inasmuch as he found the former in only three samples per 1,000, while he found the latter in from 100 to 200 per 1,000. In regard to the varieties resembling the bacillus of Gaertner, it is pointed out that their action in milk does not produce permanent acidity, coagulation, or noticeable smell, a property also noted by Klein in his paper³ on sewage pollution of shell fish, so that there is nothing to indicate their activity in milk and its unwholesome nature, such as might be detected by the senses, and yet under this treacherous condition lie the worst forms of milk-poisoning. At the same time the faecal contamination of milk to a small extent does not seem to do serious harm, and in English dairies, except under extraordinary care, a certain slight degree of contamination always does take place, but under careless conditions—far ahead, however, of ordinary Indian conditions—the contamination is much greater and the number of bacteria per c cm is very greatly increased. In any case, the longer milk is kept and the nearer the air temperature reaches 70° F and upwards, the greater is the bacterial growth, so that the dosage of contamination sufficient to do serious harm may be reached either under dirty conditions of collection at the outset, or may be arrived at under favourable conditions of time and temperature, though the milk to start with was an average good specimen.

According to Professor Hallock Park,⁴ milk, which was taken under the best conditions, contained, when received, 3,000 bacteria per c cm, and that taken in the usual way 30,000, while similar specimens kept in an air temperature of 68° F for 24 hours advanced in the one case to half a million per c cm, and in the other to four millions. As put by Mr Pakes,⁴ "for the purpose of enumeration milk must be treated as sewage," and his experience of many examples

of London milk gives an average of between 3,000,000 and 4,000,000 per c cm. It is worthy of note that experiments made by Stone for Rotch showed that milk drawn with minute antiseptic precautions was not *absolutely* sterile, but might be so after the udder had been half emptied, but a *practically* sterile milk, Rotch says,⁵ can be obtained by throwing away the first portions of milk withdrawn from the teats, as bacteria penetrate into the ducts of the teats, and his ideal infant food is one "which, while being comparatively sterile, has not been sterilized," but he significantly remarks that it would be difficult to adopt at present a standard for good milk even with all the improved methods, and, recognising this fact, considers that 10,000 per c cm is the maximum which should be allowed. For general purposes, however, the standard required by the Medical Society of the State of New York, is that there shall not be more than 30,000 bacteria per c cm before they will certify the milk, and if kept as low as this limit, it is considered that most putrefactive bacteria will be kept out. Moreover this standard was only attained after the dealers had visited the farms and pointed out how the stables were to be arranged and the cows, hands and dairy utensils cleaned. Any attempt at a higher standard, i.e., a less number than 30,000 per c cm made the price prohibitive.

A point of interest to which Prof Delépine drew attention in his final remarks was with reference to condensed milk—evidently the sweetened—which he said it would be rash to speak of as sterile, many samples containing bacilli 'held in the syrupy mass in a state of suspended animation.' However, in hot climates the unsweetened preparation is far more likely to undergo change, for Lieut-Col Van Geyzel, in making analyses of various foods for me, had to give up the attempt as regards unsweetened milk owing to his inability to find a sample which had remained good.

Such being the bacteriological aspect at present of milk as a food, as far as can be gathered from published results in its relation to "Epidemic (or summer) Diarrhoea" in England, it is interesting in connexion with one's clinical experience of diarrhoea in India both in children and adults, but especially in the former.

In the discussion, on milk and other food poisoning and epidemic diarrhoea, by the Epidemiological Society, Major Firth remarked³ that "he was more than doubtful as to there being any connexion between the *B. coli* and diarrhoea, for in India the milk supplies were abominable but there was little diarrhoea." This statement as to the rareness of diarrhoea in India is somewhat surprising, and it would be interesting to know if this is the experience generally of officers in charge of British Troops. Certainly among European children it is common

enough As to the connexion between *B. coli* and diarrhoea, it is admitted that slight contamination is comparatively harmless, whether, however, the gross faecal contamination that necessarily occurs in India does not reach a sufficient dosage to be injurious is certainly doubtful. But an important factor comes in which materially affects the question, *viz*, the altered nature of the contamination when the cows are unhealthy, owing to which the milk becomes polluted with pathogenic varieties of colon bacilli of probably increased virulence, the introduction of which renders the milk decidedly pathogenic. Now there is little doubt that a considerable proportion of Indian cows is unhealthy. They are animals that are never inspected by any competent authority, and, judging from their general appearance, a large proportion, I believe, would be condemned if inspected, and it is more than likely that the whole of them, except such as are housed by Europeans, become ill at times, rendering their milk unwholesome and probably pathogenic, owing to the terribly insanitary condition of the sheds in which they are housed and the excessive overcrowding. From observation of cases of diarrhoea in children where the greatest possible care had been taken in the manipulation of milk, I concluded that the cause of the trouble was due to a temporary unhealthy condition of the cows from which the milk was taken. It is also exceedingly common for Indian milkmen to take milk from cows when the *quantity* is far below the standard allowed by any dairy, and when in fact such cows should not be giving milk for use. Professor Delépine also remarks that when some animals in a herd are affected with intestinal inflammation, "virulent bacilli must frequently escape from their bowels, and infect a portion of the milk, more or less directly," if the strictest cleanliness were not observed. In this connection it is probable that cattle in India often do suffer from enteritis or colitis in the hot weather from eating any rubbish they can pick up in their half-starved condition.

There is also a second factor which naturally follows from that now stated, and which is lost sight of as a rule as a causative agent of diarrhoea in India, but which from the very nature of Indian milk-supply must, I believe, be frequently a cause of attacks in children and probably also to some extent in adults. This is the elaboration of toxins due to great bacterial growth which probably goes on in milk in the udders of *unhealthy* cows kept under the worst possible conditions. Elaboration of toxins could also take place in milk greatly contaminated at the time of collection and allowed to stand for hours before boiling or sterilization, and this no doubt frequently happens. No amount of heat, of course, will nullify the noxious effect of such toxins, and such milk

is in consequence a real food poison and the disease, though termed diarrhoea, is really food-poisoning. Rotch, in his paper already referred to, though he does not mention unhealthy cows, notes this point and states "that it is not by any means only the living bacteria in the food which produce gastro-enteric disturbance in the infant, but that the toxins resulting from bacteriological products whether alive or dead exist in the milk and cannot be destroyed by heat."

The term epidemic diarrhoea is never used by medical men in India, the word epidemic being so associated with cholera, small-pox, or plague, that the term is practically monopolised in officially reporting such severe epidemic diseases, and consequently epidemic diarrhoeas at once suggests cholera. But this diarrhoea which is so prevalent in summer in large towns in England, and is admitted to be due to pathogenic milk—whatever the active agent may be, whether varieties of the *bacillus coli*, or the *bacillus enteritidis sporogenes* of Klein—corresponds and is similar to the diarrhoea often occurring in children in India in the hot months before the setting in of the monsoon. It is specially noticeable in hill stations where there are European children in comparatively large numbers. The disease is, however, usually classed as dysentery—wrongly I believe—owing to the term diarrhoea being boycotted to a great extent in reports as implying an insufficient diagnosis, and everything of this nature is consequently often lumped under dysentery, even in the case of children, the significance of the latter term becoming altered in consequence. But if epidemic diarrhoea is an unsuitable designation, the term *infective diarrhoea* would convey its implied character better than dysentery, for it is an infective disease as much as typhoid fever, owing to the infective nature of the stools, contamination of food from which would render it pathogenic, and set up the disease the same as the originally contaminated milk. If one child becomes affected, other children in the house usually follow, and it is noticeable how the disease usually overtakes the majority of the children in a place, and is usually set down to chill. It is easy enough to understand how readily milk under Indian conditions might be contaminated and in the hot weather become rapidly pathogenic, and at this season with no grazing, cows become foul feeders to a considerable extent, a feature very noticeable in Malabar where they are little short of scavengers. Dust and flies are also added to the already existing causes, along with a high atmospheric temperature to favour bacterial growth in milk, so that the frequency of the disease then falls in with the seasonal incidence of epidemic diarrhoea in England. It occurs also at a time when there is little risk of chill, though often ascribed to this cause. This diarrhoea has all the variety of symptoms possible to epidemic

diarrhoea according to the degree or violence of the contamination—from simple diarrhoea with gastric irritation to diarrhoea with frequent foul-smelling motions with straining and mixed with mucus or streaks of blood, accompanied with abdominal tenderness and perhaps vomiting and great prostration. It is not easy to make down cases in adults in the same way as in children. They have a much less limited range of diet than the latter, and probably less susceptibility to bowel infection in this way, but there is at least good reason to suspect that milk supplies must be sufficiently noxious at times to produce dysenteric symptoms even in adults.

It is not difficult to see how a case of this type say, in a child, might hang on sometimes improving, sometimes going backwards, and making little headway until the condition is considered chronic, because the infective source remains. Then a change to some other place is recommended and the case improves, and, though the change in itself may be beneficial, the improvement, I believe, is often chiefly due to the fact that the patient has been completely removed from the infective source of the disease, whether such lie in unhealthy cows, then insanitary surroundings, faulty manipulation of milk, or in the defective methods of keeping milk in houses and careless arrangements by which it is exposed to infection from dust and flies. Of the various risks to which food supplies in India are liable, milk is the most open to and the most likely to suffer from faecal pollution.

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NOTE ON THE MYCOID BODY FOUND IN THE BLOOD CORPUSCLES IN REMITTENT FEVERS

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(Continued from p 217, June, 1903)

THE mycoid body is therefore definitely associated with fever, and is found in enormous quantities in the blood in severe cases of fever, in which no other of the well known parasites of malaria can be found. It is my experience that the number of mycoids bears a direct and readily recognised relation to the severity of the fever, in patients in which they alone are present, and an inverse one to the rapidity and completeness of recovery. The clinical types of fever with which the mycoid is associated are at least three—

(I) An acute form, the duration of which, with or without treatment, is seldom less than five or six days. The onset of this fever is gradual, the patient generally complaining of malaise, loss of appetite, nausea, vague body pains, and stiffness "all over"—a stiff and weary feeling, especially of the muscles on the front of the thighs, is a common complaint, aching eyeballs, severe frontal, and then occipital, or general headache, tender-

ness over the whole head, perhaps, for a day or two before anything more definite is noticed by himself. The temperature at this time shows no great elevation, it may be 100° or 101°, and remit slightly in the forenoon. On the second and third days these symptoms increase. The headache is intolerable, the patient, if a European, invariably is firmly convinced that he has "had a touch of the sun," nausea is succeeded by vomiting, excited by nearly everything swallowed, there is a good deal of prostration, flushing, alternating with shivering attacks are felt, there may even be a short definite rigor, but there never happens that classical succession of marked cold, followed by hot and then sweating stages, which form the typical attack of ague. The bowels are, as a rule, constipated, though not infrequently an attack of diarrhoea is the initial symptom, the urine is diminished, denser, and loaded with nitrates. On the third or fourth day the pyrexia becomes severe, the temperature rapidly reaching and maintaining a level of 104° or more, with but slight remissions and often higher exacerbations for several days. No definite fastigium, no definite intervals are to be made out in the daily curve. The temperature is generally a little lower in the forenoons, and the higher points are usually reached about 5 P.M., but the periods may be shifted later, and a particularly troublesome type of fever occurs, in which the highest temperatures seem to recur about midnight. Varying more it would seem with the patient, than the exciting cause, the symptoms during this time may be either chiefly gastric, or chiefly cerebral. When the former, the vomiting is often almost continuous, even iced water in small quantities exciting it, and of course bile is sooner or later brought up (bilious remittent). If cerebral incidence is the more, then delirium, stupor, coma occur, but these signs are, in mycoid infections at least, the effect almost always only of hyperpyrexia. And here—although it is not my purpose to enter upon treatment—a word of warning may not be thrown away. It is perfectly possible for the clinician and if reliance be placed upon mouth, or axillary temperatures, he is sure at some time or other to be deceived with a result perhaps fatal to the patient by the temperature record. I have, for instance, known a patient brought in in a state of collapse, with flickering pulse, &c., in whom the arm pit record was 101°, that in the mouth but 103 and the rectal temperature 108°. The hyperpyrexia is sometimes intractable. Constant immersion in iced baths alone will reduce it, perhaps only a degree or two. The moment they are intermitted, the temperature rushes up again, and finally an evil half hour occurs, in which once having reached 108°, or more, the application of cold fails again to restore the patient. During the pyrexia, the pulse runs riot, and a principal cause of death is exhaustion of the heart. At the intervals when the temperature is lower, the patient may sweat, he feels exhausted, but relieved, and not particularly ill. The fever lasts usually for some five or six days, when the pyrexia ceases not to recur, the other symptoms vanish, and the patient is relieved of his attack. He is not, however, protected against another, and it is common in my experience for the initial illness to be followed at about ten days' interval by a similar attack, but of less severity. Throughout the whole of such an attack of severe "remittent" fever, the most careful and repeated examinations may fail to show a single one of any of the hæmamoebiæ in the peripheral blood. Neither are the pigmentation of leucocytes, which accompanies ordinary malaria, nor the crescents, the usual finds after malignant tertian infections, to be found. But mycoid bodies are to be found in enormous numbers, in all such cases, numerous at the beginning, increasing with the onset and continuance, diminishing with defervescence, and disappearing completely or almost so upon recovery.

It is this form of fever which generally attacks Europeans (and others) after perhaps several years of complete apparent freedom from all febrile complaints and

it is to this fever that the few fatalities from "malaria" which now and then do occur among Europeans are, I believe, generally attributable. Often no parasite is discovered by the medical attendant, the mycoid being of course not demonstrable by the ordinarily known methods of examining the blood. The fever is then perhaps called "sunstroke."

(2) A *sub acute* form, in which the signs, duration, and all conditions are much the same as those of the acute form, but less severe. The writer's wife and children suffered from this kind of attack, as well as several servants of the household at different times. So that he had ample opportunities of thorough examination of the blood in patients in whom all suspicion of infection by any other form of parasite, then, or previously, could be excluded. In none of them at any time was anything resembling any of the hæmamebidae ever found.

(5) A *chronic* form. Infection by mycoid bodies, the presence of which produces no very definite symptoms to attract attention, is one of the commonest affections of this region of the tropics.

While few in number in the blood, 1 or 2 per five to ten fields of red corpuscles counted, they produce no results. But an increase of them to perhaps 1 per cent or more in number is followed, at least to those who are sensitive to slight ailments, by quite definite symptoms. The patient feels "shiverish," dull, dyspeptic, depressed, and out of sorts generally. He may have vague aches and pains about bones and muscles. Stiffness in the legs, is in the mild as the severe form a common symptom, heralding the onset of an attack. There then succeeds a very insignificant rise of temperature, perhaps to 99° or 100°. Headache, optic, and other neuralgic pains are observed to come on at such times, by those wont to suffer from them. For the most part those who suffer from such subdued attacks of the complaint believe they have what is vaguely called "liver," the more especially as a queasy stomach is a common feature of them. But during these attacks the blood contains mycoids in large numbers, whereas before and after them, there are none. Moreover, the attacks are not only immediately benefited by quinine, which is no less an efficient remedy also for the graver forms of the sickness already described, but their recurrence may be prevented by the regular use of that drug daily in small doses. This is the writer's own experience, derived from observation now of some hundreds of recurrences of precisely the train of events described in his own person, in the members of his family, and many others. Always the increase of mycoids in the blood is accompanied by fever, always, and as certainly a small dose of quinine relieves the symptoms and is followed by the total, or nearly total, disappearance of the mycoids.

In the Seremban hospital, every patient has the blood examined on admission. Every patient with mycoids is treated with quinine, and the diminution in their number is recorded as the treatment goes on. Cases are seen in which the mycoids infect almost every red corpuscle. These patients are always profoundly anæmic. I have little doubt but that the mycoid infection is the cause of the anæmia. The systematic use of quinine, given usually by intravenous injection, effect marvels in these cases. The mycoids rapidly become reduced in number, and with them the anæmia. These patients do not do so well on any other treatment.

It is obvious that if the mycoid body be a parasite (or epiphyte) it must ultimately produce profound disturbance of blood affected by it. I believe it to be the cause not only of the severe fever I have described, but also of most of the grave anæmias affecting coolies in the tropics. Nor is it improbable to expect to find in his morbid agent also, the explanation of much of the "low fever" by which Europeans particularly are affected in the same regions, and even much of the vague understood, but only to well known deterioration of health, which is at present put down as "acclimatisation."

Specific nature—So far I have dealt, perhaps unwarrantably, with the mycoid, as though its specific nature and pathogenic properties were beyond doubt. But although this is the view of it which I have, on the evidence accessible to me here, adopted, it may be as well to discuss the arguments (or some of them) which make for and against such a conclusion.

The first fact then is that in the mycoid we have obviously a solid body, composed principally of irregular, branched, and exceedingly tenuous filaments, lying usually wholly within, but some times also partly without the red blood cells, and at times found even free in the plasma. In staining affinities it resembles, but is not identical, with the chromatin of nuclei, and the substance, not perhaps true chromatin, of the blood plates.

Such a body might be (1) an artefact, or (2) some normal, hitherto undetected component of the red cell, about the life history of which, it must be conceded there is, after all, but little or nothing really definitely known, or (3) some form of change, or necrosis in the cell,—a pathological product, or, lastly (4) a foreign body,—an invasion from without, a living growth occupying the cells,—a parasite, or epiphyte.

So long as no more was known about the mycoid, that which I first reported, namely, that it was observable solely in fresh specimens, treated with methylene blue, there might have been ground for the contention, which some of my *confères* made, that the mycoid was but an artefact. A distinguished director of an Institute for Medical Research for instance, considered, and I believe still considers, that this interesting body is a sort of fissure or crack in the spongioplasm of the red cell into which the stain diffuses, or along the edges of which it becomes precipitated, like mineral in a rock. This peculiar solid crack in a practically fluid medium (such as the interior of the red disc undoubtedly is), seemed to me an explanation more difficult than the thing to be explained. Now that fixed specimens can be made in which the blue is easily shown to be removable, and replaceable by other stains, which yield exactly the same appearance, the view of the mycoid as an artefact need hardly be further discussed.

The constant association of the mycoid, in a degree recognisable to be brought into relationships with the degree of gravity of sickness of those in whom it was found, was however not to be denied, and the "crack" has been awarded by this expert, and others of my colleagues, what is called a "diagnostic value." But the contention was next made, and this may now be dealt with, that the appearance is not the cause, but is the result merely of fever or of processes of disease—pyrexia and the like—owning other specific causes. Against this view, it may be said (1) that the mycoids are more frequently found in certain specific forms of illness than others, which would not be so, if they were merely a result of any or all complaints, (2) they are not more frequently found after severe pyrexia than after other forms of illness, (3) they are, as a matter of observation, most numerous in cases of prolonged febrile illness with debility, and (generally) great anæmia, (4) last, dealing with the conception of the bodies themselves physically, as a product, a result of change, necrosis, or degeneration within the affected red cell, an otherwise inert mass, the peculiar feature of mycoids which I pointed out, in my first article, their motility, their in fact, incessant very active motion is against this view of them as dead products.

For the view that, whether as an ordinary, normal, physiological constituent of red corpuscles, or an unusual but still physiological element, called into being through abnormal stimuli (and therefore, so far pathological too) they are an integral and living part of the red blood cell, there is more to be urged, which is worth discussion. It is supposable that they are in some way, in fact, nuclear in origin, that they are either unusual, erratic, or aberrant newly formed nuclei,—nuclei, which during disease, are formed ill, or, as a result of it, become changed in an

irregular manner, or that they are the irregular relics of that primitive nucleus, which upon whatever theory as to their origin, is believed, at one time or another, to have been present in every red corpuscle.

As opposing the first part of this theory, it may be said that the formation of nucleated red discs, under stimuli of stress, and their appearance in the blood stream, is well known, never in their optical aspect, or reactions, do the nuclei of such red cells bear the slightest resemblance to mycoids.

The second part of the supposition, that the mycoid body is but the irregular remains of a primitive nucleus, which, for some reason or other, has become incompletely absorbed possesses some fascination, as a theory, for those who believe that every red corpuscle once had a true nucleus as a fact. For, if that were so, when, and how did that nucleus disappear? This is a mystery in physiology, which it seems to me observation and theory, both have long been notoriously inadequate to answer. The mycoid might very well in part solve this problem.

It would be the nucleus, or the remains of it, but so changed both in form and substance, that it failed to give the reactions typical of nuclei. Accepting this, there would remain, to the believer in the formation of red discs through nucleated precursors from bone marrow cells, the difficulty first of explaining the absence from the blood stream of red cells, which should present the earlier, as these show almost the last stages of the nuclear decay, and, so far as I am aware, such forms have been seen neither in the blood, nor anywhere else, and, secondly, the peculiar motility possessed by the mycoid, already adverted to, which seems an extraordinary and even useless function for a dying nucleus to acquire.

But, if the observations which should serve to prove the disappearance of their posited nucleus from the red cells, are inadequate, not less so are those upon which the entire theory of the direct formation of the latter from bone marrow and gland cells, as forms primitively possessing such nuclei, is based. For what, after all, is the evidence adduced? It is merely that in early life, usually, and in adult life, sometimes, under conditions in which the glands, the bones, the blood, are one or all of them—diseased, the production of nucleated cells, carrying more or less hæmaglobin is to be observed at these sources and now and then some of these forms are to be met with in the blood. Upon such observations, which logically afford nothing more than a presumption that the formation of such nucleated hæmaglobin carrying cells, at a time of abnormal stimuli, is an attempt by the organism to supply through unusual agents, the normal needs and affords not even a presumption that during normal life, the production of blood cells is effected in the same manner upon such tally inadequate observations, is the whole of the generally credited view of blood-formation based. It is not surprising that the disappearance of these red-cell nuclei should be difficult of explanation. There is nothing to show that they were ever present.

I gave some reasons why this theory of blood formation should be discredited in my former paper. Of all the normal formed constituents of the blood, none (except the small lymphocyte) is ever to be met with, save adventitiously, in any tissue. The presumption must be made therefore that it is in the fluid, in which they are alone to be found, that their development takes place. I believe that there is to be seen in the blood itself, every stage except the first, by which all its elements are produced. The small lymphocyte, produced in the lymph glands, enters the stream, and slowly grows there into large pale-staining lymphocyte, this, later, into the large mono nuclear leucocyte. Between this, and the polymorphonuclear neutrophil leucocyte the gradations are easily recognisable, and form a complete series the significance of which is admitted, even by Ehrlich, as so far representing evolution.

The classification of the large amœboid forms according to the staining affinities of their granules—which is much as if men should be classified by the contents of their stomachs,—seems to me to have less value. But between the polymorphonuclear leucocytes, with distinct, not yet divided nuclei, and those finely granular, generally amœboid forms, in which the nuclei have lost all distinction of shape, and are represented merely by an irregular network of fine chromatin threads unequally diffused throughout the whole mass of cytoplasm again, every gradation of change is to be seen and can be witnessed often enough upon a single slide.

The next step—and particularly in specimens prepared by my method, which have been afterwards stained with safranin, this stage is one of the easiest to recognise,—is that the diffuse finely granular amœboid form becomes divided into numerous small fairly equal portions, about two or three microns in diameter each containing a portion of the chromatin of the original nucleus. Irregular in shape at first, from mutual compression the little segments gradually assume a more rounded form, as the whole mass by some centripetal, or chemiotactic, mutually repulsive action upon the part of its component portions, slowly separates into what it may now easily be recognised to be namely, a heap of blood—plates. The clustering of these elements is thus not due, as commonly supposed, to their peculiar adhesiveness causing them to run together (this, if rightly considered, will be seen to be an influence likely to have just the opposite effect, since the other objects to which they might stick are both more numerous, and offer larger surface to stick to)—but a result of their original formation as one mass, the clumps are but blood plates not yet entirely dispersed.

The separated blood plate may be clearly seen, when studied in citrated methylene blue solution, to consist of two parts. One of this is a compressed, nearly flat, perfectly circular mass of hyaline substance exactly resembling the stroma of the red blood cell. It can be, like that stroma, stained by most of the diffuse stains, as fuchsin, congo, safranin, iodine green, eosin, and methylene blue. It has no special affinity for any of these, however, and, with the exception of the last, is coloured by them only in strong solutions. The other component of the platelet is a cyanophil finely granular matter, which becomes like the nuclei of the leucocytes, rapidly extruded from the plate, in saline solutions,—the process is most easily and distinctly followed in the "M.B.C.M." fluid. The granules of the separated portion of the plate vary both in size and staining affinity. All the granules stain, some very deeply with methylene blue, most of them with safranin, gentian violet and other diffuse stains, but only a portion of them with methyl green, still fewer with logwood. The whole mass of the extrusible "nuclear" part of the plate seems to be made up of rounded particles embedded in quite clear cytoplasm. There is no trace of network of threads or filaments. The plates easily dissolve in saline e.g. (borax, alum, and normal saline) solutions and in dilute acids and alkalis, but they resist acid peptic digestion, as do the nuclei of white corpuscles considerably longer than, for instance, the red cells. They are, according to my observation, by far the most numerous of all the elements found in the blood. And it remains to be remarked that between them and the largest red cells, as Hayem first insisted, there is to be made out a series of gradations, both in size, in hæmaglobin content, and all recognisable physical properties, which forms as complete a picture, and as surely argues the development of the one from the other as does the presence of similar evidences of transition that of the white cell from the lymphocyte.

There is then in the erythrocyte, at certainly its earliest stage of existence (according to my theory) some amount of a cyanophil matter which, if not true nuclear chromatin, or nuclein, is at all events something like it. How would this fact, assuming it, as I believe it to be

one, serve to explain the mycoid organism? Between the mycoid and nuclear formations, as ordinarily understood, there is not, as I have said, visually the slightest resemblance. And in their physical chemics the difference seems very great. Recognised nuclear structures can be stained not only by some stains by which apparently, the mycoid cannot, but they absorb stains which effect them after they have been dried, while it is the peculiarity of the mycoid, that, although easily stained *intra vitam*, or while it is moist, it cannot be made to absorb any stain once it has perished or become dried. On the other hand, the change through which the nuclear matter of the leucocyte becomes the certainly different—I would call it nucleoid—matter of the platelet, and by which again, this matter, fairly easily stainable by nuclear stains in the plate, becomes altered into some thing not visible, or to be rendered so by the same means in the growing and fully grown red blood cells, this change, which is a fact, and one the stages in which can be traced, seems to be just such an one as must have been postulated as necessary to bring about the ultimate extraordinary difference,—also a fact, which exists between the nucleus and the mycoid.

Nucleoid matter is present at the beginning in every red blood cell. In the plate it may be stained by "dry" methods though not well shown by any of these. In the young disc, which has already acquired some hæmaglobin, its properties have so much further changed as not to be discernible by these methods at all. It requires a special method for demonstration,—that precisely which demonstrates the mycoids. Supposing, as seems permissible, that while, ordinarily the growth of the red cell (from platelet to maturity) depends upon the energy of the nucleoid matter implanted in it and that while ordinarily the mass of the latter becomes used up and disappears, in other cases it may persist undiminished in bulk, or even become increased, hypertrophied in size, would not the resulting body in aspect and in reactions, offer the same characteristics exactly as the "mycoid"? Is not the mycoid, in short, nothing more than the remains of the nucleoid matter of the plate?

As may be supposed, since the time of my first observation of this body (in 1896), I have paid much attention to this question.

For this possibility once and completely disposed of, it would be impossible to deny to the mycoid body, a position not more interesting, but more important by far, than that of a long lost nucleus—that, namely, of an undoubted foreign body, a living parasite or epiphyte, attacking red blood cells, the first of its class to have been discovered.

The question is one which, it would seem, could be once and immediately settled by suitable inoculation experiments. But in the district in which I work, the mycoid is so almost universally distributed that a pure experiment of the kind cannot well be devised. No positive conclusion, which could be obtained, would have any force.

It may be also that one is discussing vainly a vain matter, since if the organism be a physiological one, found in human red corpuscles everywhere, that point could easily be settled at home by any observer.

It seemed to me desirable to come to some decision for myself, from the important point of view of *treatment*, however. It may be pleasant, but it is not always possible to sit on the fence, in regard to such a question forever, and the complete indifference with which my first communication on this body was received, while only that which is meted out to every English discovery by English colleagues, showed me how little assistance was to be expected in its investigation from other quarters.

I will therefore state the reasons, which seem to me sufficient for regarding the mycoid as not the nucleoid relics of the blood plate, but a true parasite.

(1) In the first place, without insisting in detail upon the physical and chemical differences, which

obtain between them, the sum of them is large. As the mycoid does not look like a nucleus, whether of normoblast or other cell, so neither does it resemble the material of which a blood plate is composed. It actually is not the same as either of these structures, and it is difficult to assign to it as an origin, formations from which it has ultimately come so widely to differ.

Many of the mycoid bodies attain a mass, exceeding that of the originally enclosing corpuscle, which they appear, in the end, to rupture. Many of them are obviously growing inwards from the periphery of the corpuscle.

In nearly every specimen examined, the corpuscles occupied by mycoids are the largest. Some of them are as in the case of erythrocytes, invaded by simple tertian hæmamebæ, plainly greatly enlarged. Now were the organism merely the remains of the primitive formative material to which the disc owed its growth, it should be most conspicuous in the younger, necessarily the smaller cells, or, at the least be more frequently seen in these, than in the larger ones. But a little observation will convince anyone that precisely the opposite is the case.

(2) The occurrence of a similar organism in dogs and other animals affords no presumption that the organism is, therefore, any the less foreign, and not physiological, since, in the analogous case of other hæmamebids, there is hardly any vertebrate, which some form or another of such sporozoa does not affect. On the other hand, were the appearance physiological, it would be reasonable to expect to find similar organisms, in the red blood cells of all the mammalian vertebrates since it can hardly be supposed that their red cells, so similar in form and in every respect to our own, should have a mode of origin diverse. But this does not appear to be the case, at least in regard to three or four species upon which the writer has made very extended observations.

(3) The undoubted definite relation, which the extent of affection of any blood with mycoid bodies bears to febrile and anæmic conditions in the host, as to which observations may be made in hundreds of cases and the easily demonstrable facts, that they may be made to disappear from the blood almost entirely, by the administration of quinine, and that the sickness accompanying their presence disappears with them, affords a very strong presumption that the bodies are pathogenic, are the cause of the diseases, in which they are found. Were they physiological, again, merely an accompaniment, or evidence of increased blood formation—repair—they should be most evident after severe trauma involving great loss of blood. But, though I have had one or two opportunities of investigating this point, I do not find this to be the case.

I conclude, then, on the evidence, that the mycoid body is a true parasite, capable of causing grave disease, and invite my colleagues to give it their attention.

To what other classes of organisms it may be allied, it may be, until this view of its nature is either confirmed or rejected, idle to speculate. But the hypha-like appearance of its filaments, their mobility at certain stages, their final apparent contraction into densely aggregated masses of immobile matter, recalling the true plasmodium of certain among the macroscopic fungi—these features suggests the possibility that the place of the mycoid may be among the mycetozoa. For, although no members of the genus quite so small, have been, I believe, described, that is no reason why they should not exist. It is possible that in a fungus such as this may be found that explanation for the connection of certain outbreaks of remittent fevers with the soil, which here and there the mosquito and sporozoon cycle has not been adequate to explain. The mycoid may be such a terricolous mould or lichen.

Since writing the above, I have seen Dr J. T. Clarke's extremely interesting reply to my first paper on the mycoid, published in the *Journal of Tropical Medicine*

on November 1st, 1902 Dr Clarke, struck like myself with the prevalence of the mycoid, seems loth to credit a structure so often met with in the blood with pathogenic properties. Casting about, as I did, for some more plausible explanation of these absolutely novel, and highly distinctive body, he adopts the theory (which I have already discussed at some length) that the mycoid is nothing more than the relics of the original nucleus of the erythrocyte. The reasons which I oppose to this will have sufficiently appeared above. I may add that I also had examined the blood of young, though not new born puppies, with a view to inoculating them, if free, with the similar organisms with which (I had already noticed) grown dogs were generally much affected. But the puppies, though only a few days old, had themselves already mycoids in plenty. I did not regard this as a proof of the mycoid being a normal component of the blood, however, so much as indicating very early, perhaps even congenital infection. The dimensions of the presumed spore portions of the mycoid—about that of hæmocoelæ—are so small, that there would be no obstacle to transplacental infection.

In regard to the appearances in avian corpuscles, I believe that Dr Clarke is wrong. Carefully as I have studied what must be the same feature as he describes both in pigeons and fowls, I cannot find in either species any nuclear extrusions or extensions of nearly the same characters as the mycoid. There is nothing mobile about the processes of the nuclear network seen in birds, they are far more tenuous than the branches even of the mycoid, and are finally stainable both in dry preparations and by logwood, which the mycoids are not.

A Mignon of Hospital Practice.

ASCARIS LUMBRICOIDES CAUSING PERFORATION OF STOMACH AND INTESTINE AND DEATH

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THE following cases are of interest owing to their rarity, although the prevalence of round worms are extremely common. I should also like to see published the experience of other medical officers in this respect.

I Nga Pakyaw, aged 43, was admitted to jail in a bad state of health and was a confirmed opium eater. On admission to hospital on the 10th April 1902 he was emaciated-looking and anæmic. The prolonged use of opium had affected his digestive organs considerably, and the most prominent signs were complete loss of appetite, irregularity of bowels, and a furred dry tongue. There were no signs of nausea or vomiting, or pain in the abdomen. Suddenly, on the afternoon of the 13th April, 1902, the patient collapsed and passed several stools. Pain was intense, and the patient was covered with a cold clammy sweat. The patient died two hours later.

Post-mortem—This was performed one hour after death. While the chest and abdominal cavities were being opened two round worms

were found. They measured 8 and 10 inches in length respectively. When the stomach was removed and examined it was found that there was a large ulcer situated on the posterior surface close to its lesser curvature and about its middle. It measured 3 inches in length and $1\frac{1}{2}$ inches in its broadest part, and was oval in shape. The perforation was the size of an 8-anna piece. The border was sinuous, edges indurated, and floor distinctly terraced.

Around nearly the whole of the ulcer there was a gangrenous patch extending to little more than an inch into the surrounding tissue. The whole of the stomach was pale and slightly atrophied. The ulceration was of old standing.

Intestines—The whole of the intestines in their upper part were coated with lymph and of a bluish black colour.

Heart was somewhat pale, flabby and contained a large amount of *post-mortem* clots. It weighed 5 ounces.

Spleen was atrophied and greenish black in colour and weighed only one ounce.

Lungs were congested at their bases, but very much atrophied. They weighed 7 and 6 ounces each.

Liver congested slightly, otherwise normal, weighed 3lb.

Kidneys atrophied and weighed 3 ounces each.

II Nga Bogale, aged 26, was admitted into hospital on 22nd February 1903, complaining of fever. He was in an "indifferent" state of health and was losing weight.

Previous history—He stated that he had no malarial fever, and his previous illnesses are unimportant.

State on admission, etc—He is fairly well nourished. Temperature 100. The fever was malarial in character and was accompanied with slight shivering which lasted for an hour, and this was followed by sweating. The temperature, however, did not fall to normal except on the 8th evening when it soon rose again. There was nothing found in the examination of the blood. Tongue was furred, breath foul, appetite poor. Bowels fairly free, stools healthy, complained of no pain anywhere.

Respiratory system—Sibilant rhonchi and resonance on percussion with prolonged expiration sound, no expectoration.

Circulatory system—Pulse 88, accentuated second sound over aorta. *Heart* normal. *Liver* and *spleen* normal. *Urine* sp gr 1015, slightly acid, no albumen, no sugar.

After history—He was progressing fairly well till the sixth day, when he complained of pain at the umbilicus which was not severe. During the night he vomited a round worm an hour after *santonine* was given, and passed a restless night. Next morning his temperature was 98.6, but his condition was not hopeful. About 9 A.M., he was collapsed, the pain was acute, and was followed by marked tenderness

and rigidity of the abdominal walls, a pinched countenance and a rapid weak pulse. He died at 12-45 A.M.

Post-mortem examination—This was performed four hours after death, and all the organs were found healthy. On opening the abdomen there was a good deal of purulent fluid found in the cavity. About a foot from the ileo-cæcal valve there was a large perforation found which measured $2\frac{1}{2}$ inches long and about an inch broad. About $1\frac{1}{2}$ inch above this there was a large ulcer found with two small perforations about the size of peas. The tissues around these perforations for an inch or so were swollen and congested, especially around the upper perforation. The floor of the ulcer was ragged-looking, the sides gradually sloped towards the perforation, and sloughs were adherent about the site. In the lower and larger perforation the rent was an oval one, and the edges were fairly clean. The inner portion of the small intestines were tinged with bile almost throughout their whole extent, while on their external surface there was a very marked scarlet-coloured congestion extending almost to the duodenum to be seen. This congestion was marked in two parallel lines of about one inch broad with an interval of clear tissue about an inch broad between them. This interval corresponded to the opposite side of the attached border of the mesentery. One round worm 8 inches long was found in the lower part of the ileum. The whole of the large and small intestines were coated with flakes of lymph on their outer surfaces. The small intestines measured $16\frac{1}{2}$ feet and the large intestine $4\frac{1}{2}$ feet. The coats of the stomach were thicker than normal and were tinged with bile, but otherwise normal.

Remarks—This is the second case which has occurred in this jail within a year where death was brought about by perforation due to round worms, and resulting in acute septic peritonitis and death. Several authors have suggested that these worms produce nervous symptoms by a peculiar irritating substance found in them, and others have gone still further and state that there is sometimes a remarkable condition of fever with intestinal symptoms, foul breath and intermittent diarrhoea produced by these worms. They call the latter condition Typho Lumbicosis.

In the first case there were no definite symptoms, but in the second case there was a fever lasting for several days with foul breath and irregular bowels. Both the cases died very rapidly, and both were opium-eaters. When one considers the large number of prisoners affected with round worms, it is astonishing how so many of them escape these fatal results. Some time ago santonine gr. v, followed by a purgative, was administered to 100 prisoners in the jail, and it was found that 89 per cent of the prisoners had worms—

3 of them had 1, 26 of them 2, 15 of them had 3, and 18 of them had 4. The longest worm was 15 inches, and the shortest 4 inches. Later, santonine and a purgative were given to a 100 new admissions to the jail. It was found that 82 per cent of them had worms—12 of them had 1, 51 of them had 2, 11 of them 3, and 8 of them 4. The longest was 14 inches and the shortest 6 inches long. We are in the dark how to explain the viability of these worms in the stomach and intestines, and it has very recently been suggested by Weiland that this is "due to an antiferment which opposes itself to the tryptic (or peptic) ferment. The antiferment is destroyed by boiling." It was stated above that both were opium-eaters. Now, as opium diminishes the secretion of both of the gastric and intestinal juices, it is very probable that these worms have thus free play, hence the perforation of the coats of the stomach and intestines that has resulted in these two cases. My thanks are due to my hospital assistant, Maung San Gaung, for helping me to record these results.

POISONING BY THEVETIA NERIFOLIA (YELLOW OLEANDER)

BY F. D. DALEY,

MILY ASST SURGEON,

Asst to Civil Surgeon, 24 Parganas

On the 5th March, the body of a Hindu male aged about 21 years, was brought to the Alipuri morgue for *post-mortem* examination. The police note accompanying the body stated that the deceased had taken some *Kharab Phul*, from which he died shortly afterwards.

The *post-mortem* examination presented the following appearances—

The vessels of the membranes of the brain were considerably injected with dark fluid blood, and the sub-arachnoid cavity contained above 3 ozs of the same material.

The brain substance was normal—the lateral ventricles contained about one drachm of slightly pinkish watery material.

The pericardium contained about $\frac{1}{2}$ oz of straw-coloured serum. Both sides of the heart were empty.

The liver was congested, the portal system contained a quantity of dark fluid blood, and the gall bladder about 1 oz of dark fluid bile.

The stomach contained from 2 to 3 ozs of beef-tea-like material, in which was suspended a quantity of a transparent mucoid substance, which gave off a peculiar acid smell. The mucus coat of the stomach was thrown into exaggerated folds, the general surface of which was congested and of a deep brick red colour, scattered about the folds were some inflammatory spots of a

lighter colour than the general surface, somewhat glistening and stellate in appearance

The duodenum to the extent of about 4 inches was of a brick red colour, and about its centre there was an irregular dark purple patch. Several millet-seed-like fragments, irregular in outline, were found scattered in the mucous folds of the stomach, which, on being analysed by the Chemical Examiner, were found to be those of the yellow oleander.

*Note by Assistant-Surgeon Rar Chunlal Bose,
Rar Bahadur, M.B., F.C.S.*

Thevetia nerifolia is chiefly used either for causing criminal abortion or for suicidal purposes. The seeds of the plant are mostly used for such purposes, though the root is sometimes used externally as an abortifacient. Its use is mostly confined to the Midnapur District and to Orissa.

I have had occasion to examine the bodies of a few cats killed by yellow oleander, and the signs I found in them corresponded closely to those recorded by you in the human case, with the exception that the kidneys were also found congested in the cats.

A CASE OF SPONTANEOUS DISLOCATION OF THE HEAD OF RADIUS DURING SLEEP

BY R. K. GUPTA, L.M.S., M.B.A.S.,
Asst. Surgeon, Arrah

A MAHOMEDAN boy, aged about 16, attended Aniah Charitable Dispensary for the treatment of pain and stiffness of left elbow joint.

The boy stated that about four days ago on getting up from sleep he noticed that he could neither bend nor straighten his forearm. He slept with his arm under the head. He applied several native medicines, but to no purpose.

Present condition—The elbow joint was swollen. The forearm pronated inwards and was at an obtuse angle with the arm. The movements of the joint were interrupted.

At the suggestion of the Civil Surgeon, Captain A. F. Stevens, I.M.S., the boy was placed under chloroform, and the dislocation reduced without difficulty. The forearm was put in a sling only.

Remarks—In the absence of any injury dislocation or fracture of a bone is a rare occurrence, and these cases may interest of readers. On my mentioning the above case to a local medical practitioner here I was told that his son, while aged about three years, on being taken out of bed one evening was found crying bitterly, and on search his thigh bone was found fractured at its lower third. There was no history of any injury.

A CASE OF HYDROPHOBIA OF UN-ASCERTAINED ORIGIN

BY K. PRASAD,
MAJOR, I.M.S.,
Civil Surgeon, Shreebo

SIRIANAGAM, a Madias male of about 42 years, and contractor by profession, had a fall from his pony in the beginning of June which produced several bruises over his hands and lower extremities. On this account he was attending the hospital as an out-door patient. On the evening of 13th June he complained to the Hospital Assistant that there was something wrong with his throat as he felt difficulty in swallowing and eating. His throat was examined, and as nothing unusual was discovered, it was presumed that the pain might have been due to cold and would soon pass off. On the morning of 14th, the patient came to the hospital again saying that he had a very bad night, and that on account of spasmodic fits, he could not drink water, and although he felt hungry, he was unable to swallow anything. A suspicion of hydrophobia was then entertained, but the man assured the Hospital Assistant that he (the patient) was never bitten by any dog or cat in his life, and as he bore no marks of bite and was never under treatment for an ulcer or wound, although a frequent visitor of the hospital, the Hospital Assistant gave him a mixture of bromide and chloral, and the patient went away. In the afternoon his condition did not improve, and during night he became so bad that early in the morning his wife brought him over to the hospital and kept there.

Condition on admission—At the time of my examination I found him in a very distressing condition. He was not depressed or melancholic, but had an anxious look. His body was absolutely free from sores or wounds, and nowhere there was any pain or numbness. His pupils were dilated, voice clear, pulse somewhat quick, and temperature 100° F. His chief complaint was that for the last two nights he had not had a wink of sleep, and although he felt very hungry he was unable to eat anything. Saliva was neither viscid nor abundant, and it did not hang about the mouth. He was very restless, and talking for a minute or two threw him into spasms. The look of water or milk also brought on these spasmodic fits. At about 10 o'clock barking fits set in, and the patient became so sensitive that a loud voice, strong light or wind became intolerable, and mere touch caused a violent spasm. He, however, never tried to injure any of his attendants, and between the fits he was quiet and his mind clear. He very often shouted for his wife and children, but the moment he saw them and wanted to say something barking fits came on.

as if he was talking to them after the fashion of a dog. At 11-30 A.M. paralytic stage set in. The man became quiet and unconscious, and within few minutes died from failure of heart's action.

Treatment—Beyond frequent injections of morphia I was not able to do much as the case seemed to me hopeless, and it was only a torture to worry the deceased with nutrient enemata, &c.

Remarks—Hydrophobia, I understand, is never spontaneous in man and, therefore, the deceased must have got the poison into his system somehow. As a contractor, he had done some work for the hospital, and for the last ten or twelve months I myself used to see him at the hospital now and then. Up to his last moments he never admitted that he was ever bitten by a mad dog or cat, and his wife, a companion of nearly ten years, also denied any knowledge of a dog bite. How then did the poison get in? Either the deceased must have been bitten by a mad dog at one time or other in his life and forgot all about it, or he might have been inoculated by some dried saliva when he had the fall about a fortnight before his death.

A CASE OF LYMPHO-SARCOMA OF THE SMALL INTESTINE.

By JOHN MULVANY,

CAPTAIN, I.M.S.,

Superintendent of the Presidency Jail, Calcutta

APART from the supposed rarity of malignant disease in tropical countries, the following notes present several points of clinical interest, which may, I hope, justify their publication.

R. R., male, Hindu, aged 40, cultivator, by caste a *gwala*, belonging to the Dharbanga District of Bengal, was admitted, in good health, to the Presidency Jail on transfer from the Dharbanga Jail on 16th March, 1902.

His family history presented nothing remarkable, all his near relatives, including his mother, were living, but his father had died some time ago of diabetes.

His previous history showed him to have had unusual freedom from disease. About three years prior to admission he had an attack of fever with hypogastric pain, and his "bowels and urine were stopped for a time." Since then he had had no symptoms of any sort until 1st July, 1902, when he had slight fever, for which he was in hospital for one day.

His weight on admission to the Dharbanga Jail, on the 15th November 1901, was 141lbs, this fell during the ensuing cold weather to 128, at the end of February 1902, after which it increased, reaching a maximum of 145lbs on the 15th June 1902.

At this time he was a healthy looking man in good condition, and had felt nothing unusual, he, however, now commenced to lose weight, and was placed under observation in the losing-weight gang.

During the first fortnight of July 1902 he experienced some slight irregularity of his bowels, constipation alternating with diarrhoea, not sufficient, however, to cause him to go to hospital.

On the 14th July he was seized with severe colic, and then noticed for the first time a hard lump in his abdomen. He was purged twice and vomited once. On the 15th July I examined him, and found a large tumour situated in the hypogastric and umbilical regions, it extended from the pubes to about two inches above the umbilicus, in shape, it was rounded with two lateral notches, and it seemed to be unconnected with any important organ, it was movable and presented transmitted pulsation, it was not covered by intestine.

He had slight fever. There was no distension, but passage of flatus gave much relief. Castor oil did not relieve the pain.

The urine had a specific gravity of 1010 and deposited phosphates, it contained neither albumen nor sugar.

On the 17th he passed two loose stools containing dark blood, he weighed 119 lbs, and had lost 17lbs since the 13th.

18th July, evening temperature 101°, one hard black stool.

19th July, slight fever all day, two stools mixed with dark blood.

From this on, his condition continued much the same, every day he had one or two motions containing blood. The fever was continuous and of a low type. The pain was constant and severe necessitating the use of morphia. His condition showed some slight improvement on the 3rd of August, when he weighed 121lbs, after this he went down-hill rapidly. The tumour increased materially in size, without altering in shape. On the 10th of August he weighed 114lbs, or 31lbs less than his maximum weight on the 15th June. He died rather suddenly on the 11th August from heart failure, twenty-nine days from his first symptom and one month and twenty-one days from the date of his maximum weight.

The *post-mortem* examination was made by Captain Leonard Rogers, whose notes I give below—

"On opening the abdomen there was an excess of slightly turbid fluid present. The small intestines were matted together to form a large tumour in the middle of the lower part of the abdominal cavity. This was found to include the lower half, or rather more of the small bowel extending down close to the ileo-cæcal valve, but the upper part of the small bowel was free. On further examination the mass was found to largely consist of coils of small bowel

adherent to each other and to a firm central portion. On carefully opening the bowel from above the lumen was found to be continuous with a cavity of considerably greater calibre than that of the normal small bowel and surrounded by a greatly thickened whitish wall measuring an inch or more in places, and containing a grumous mass of broken-down blood mixed with bowel contents. Below, this cavity was continuous with the unaltered lumen of the lower part of the small bowel, which was also adherent to the tumour. The new growth was thus evidently formed within the wall of the small intestine, yet the gut was dilated and not contracted in the diseased part, which measured some six inches in length.

Microscopical examination—Sections of the wall of the tumour revealed the structure of a lympho-sarcoma, which very probably arose in a Peyer's patch.

All the other organs were healthy. The mesenteric and retro-mesenteric glands were much enlarged. The tumour weighed 78 oz.

The points of interest in this case are—

1 The extreme rapidity with which the disease ran its course.

2 The large size to which the growth attained before giving rise to any subjective symptoms.

3 The absence of any obstruction.

I am indebted to Civil Hospital Assistant Atal Behari Ghose for his careful notes on the case.

FRACTURE OF THE LEG MAL-UNION OPERATION SUCCESSFUL RESULT

By B N BASU,

ASSISTANT-SURGEON

Bhola Nath Bose's Dispensary, Barrackpore

ARJOON, Hindu male, aged 17, cooly by occupation, was admitted on the 31st August last for the treatment of a sinus in the leg.

History—About the middle of June last while working, a heavy bale of jute fell on his left leg causing compound fracture of the lower third of the limb, he was treated elsewhere for the above injury and was discharged apparently cured, a week after his discharge he noticed a wound on the front of the leg just over the injured part, from which there was a very large quantity of discharge. The part was very painful too, and he could not stand on that leg.

Condition on admission—The injured part seemed to be thicker than the corresponding part of the sound limb, the thickening was on the internal part of the limb. It was distinctly hard to the feel and seemed to be bony, on tracing it downwards it was found to form an angle with the lower part of the bone.

There was a wound on the front part just outside the crest of the tibia the margins of

the wound were irregular and granulating, on probing bare bone could be felt. There was also another wound over the external part of the limb, admitting the point of a director. This wound on probing was also found to communicate with the bone, there was abundant thin discharge from both the wounds. Patient used to have slight fever in the evening.

Treatment and subsequent progress of the case—The parts were cleaned and glycerine-iodoform syringed inside the wounds. The margins of the ulcers touched with zinc chloride, and the limb was bandaged with moderate pressure, the wound in front became smaller, but the discharge continued as usual and the fever did not leave him.

On the 7th September patient was put under chloroform, both the wounds were enlarged and a few pieces of sequestra removed through both the wounds, drainage-tube introduced. The wound in the outside of the leg improved greatly, but that in front made very little progress, allowing a large quantity of discharge, while the fever did not leave him.

On the 17th September patient was again put under chloroform, the wound in front was further enlarged till it freely exposed the thickened part of the limb. It was then found that the broken ends of the tibia did not unite properly, and that a portion of the lower end of the upper fragment projected internally, causing the thickening, a few loose pieces of bones were removed through the wound in front. The chisel and mallet were used and the projecting malunited portion of the tibia was removed in pieces, the wound was drained properly and the limb fixed on an interrupted Cline's splints.

He was put on tonic treatment and made an uninterrupted recovery. He was discharged from the hospital on the 19th November last, when he could walk properly without any support, but there was still a very slight thickening over the part.

I saw him several times after he left the hospital and found him free from further troubles over the part.

A CASE OF TETANUS TREATED WITH TETANUS ANTITOXIN · RECOVERY

By W G PRIDMORE,

CAPTAIN, I M S,

Civil Surgeon, Bhamo, Upper Burma

Poo Too, Mahomedan boy, aged 5, was brought to the hospital by his father at 6 P.M. complaining of difficulty in opening his mouth, pain when trying to swallow, and pain in his abdomen.

History—Ten days before, his father said, the child had a fall from some steps. In the fall he received two wounds, one on the right side of forehead and the other on the left side of the back of the head. A paste of saffron, garlic and lime was applied by the mother, and

nothing more was done. On the 23rd March 1903, about ten days after receipt of the injury, the boy came from his play to complain of pain in the neck and abdomen. He was immediately brought to hospital.

I saw him almost immediately, and found the patient a well-nourished, healthy-looking, native child. There was some rigidity of the masseter and neck muscles with occasional slight clonic spasms. The mouth could not be fully opened, and the tongue on one or two occasions, when protruded for inspection, was bitten through spasmodic closure of the jaw. The child cried bitterly at intervals on account of painful spasms of the neck and abdominal muscles.

There was an abraded wound on the right side of the forehead and the scar of another wound on left side of occiput. Close to the latter was a small soft fluctuating swelling which proved to be a collection of pus.

Treatment—Chloroform was administered, and the wounded portions of skin and underlying tissues were freely excised. The wounds were swabbed out with strong carbolic acid and dressed.

Two grains of dried antitoxin (equivalent to 20 c c of the fluid) were dissolved in sterilized distilled water and injected under the skin of the abdomen.

March 24th—Rigidity of neck and abdominal muscles increased. The teeth could be separated only slightly. Bowels constipated. Calomel gr. 1 administered. One grain dried tetanus antitoxin (equivalent to 10 c c fluid) injected under skin of abdomen.

March 25th—M T 100.4°F. Rigidity of neck, abdominal and lower extremity muscles still marked. Rissus sardonicus present. The boy sweating profusely. Bowels constipated. A soap and water enema was administered with great benefit. One and a half grains of dried antitoxin dissolved and injected hypodermically in the abdomen at 11 A.M. The jaw at this time could be opened slightly, and milk was imbibed fairly well. At 9 P.M., 1.5 grains antitoxin repeated in abdomen hypodermically. E T 101°F.

March 26th—M T 101°F. Wounds healthy in appearance. Rigidity of muscles less marked. Bowels acting well. No repetition of antitoxin. E T 101°F.

March 27th—M T 99°F. Patient much better. Rigidity of muscles much less marked. E T 99°F.

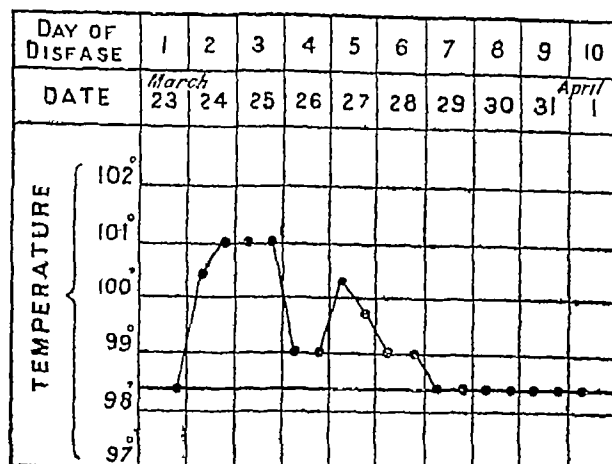
March 28th—Mouth can be opened an inch. Rissus sardonicus quite disappeared, and muscles of neck and abdomen much softer.

April 1st—With the exception of the unhealed wounds the child is quite well.

Note—It is difficult to say whether this case was benefited, or not, by the antitoxin. Ten days elapsed between the receipt of the injury and the symptoms of tetanus, but the onset of the symptoms, which were on March 24th and

25th distressing, was sudden. As the antitoxin is on its trial, it is well to record all cases.

The serum used was the dry preparation prepared in the Jenner Institute of Preventive Medicine, London, and supplied to me by Messrs Allen and Hanbury about four months ago. One grain of the dried preparation is said to be equivalent to about 10 c c of the fluid antitoxin.



INFANT WITH A CAUDAL APPENDAGE

By B CHATTERTON,

CAPTAIN, I.M.S.,

Gaya

ON the 8th April 1903, the Magistrate of Gaya, Mr F W Duke, kindly sent for my examination a Hindu male infant six weeks old, which had been brought to him as a curiosity.

The child had what appeared to be a tail. I made the following note at the time. The spine is apparently perfectly normal. Over the base of the sacrum is a brawny swelling, from the lower portion of which emerges a perfectly skin-covered tail-like appendage, about three to three and a half inches long, which resembles a penis with a very long fore-skin somewhat twisted upon itself from right to left and then from left to right. This appendage is capable of a limited amount of motion. It wags slightly when the infant takes the breast. There is no evidence of any bone in this 'tail'. It feels tough and elastic. It appears to be connected by soft attachments to the sacrum. The tip of the coccyx can be felt in its normal situation, under cover of the 'tail'.

There was a considerable amount of ulceration under the tail and down the back of the right leg.

All the other parts of this baby were normal. The parents absolutely refused to entertain the idea of having the tail removed. The reason is, I think, that the fame of the baby has already begun to spread, and I have no doubt that by judicious management it will prove a source of income to its parents.

THE
Indian Medical Gazette
 AUGUST, 1903

CANCER

THE subject of cancer is one which has received much attention of late years. There have been many publications of new books, or new editions of books, on cancer of the tongue, stomach, uterus and rectum. A host of observers have been hard at work on the etiology of cancer, and quite a respectable number of parasitic and fungous organisms, and degenerative products, have been announced from time to time as *the causa causans*, only to be discarded subsequently, leaving us as much in the dark as before. We recollect an instance which happened nearly twenty years ago, when a would-be discoverer read papers at medical societies in London and Edinburgh within the same week, so confident was he of his discovery of the origin of cancer. Pfeiffer of Weimar has had his protozoa of cancer, and Eisen his amœbæ, Plimmer described parasitic bodies in London and Russell fuchsin bodies in Edinburgh, Korotneff, Bosi and San Felice have christened various organisms with fearsome names that we need not repeat, and so we could go on adding to an unprofitable list. Numerous articles are published in the weekly and monthly medical journals of Great Britain and America on every phase of cancer. The question of the latter-day increase in the disease and its distribution is exercising the minds of those concerned with life insurance.

The treatment by X-rays in apparently inoperable cases, or the combination of operation preceded and followed by a course of X-rays is receiving due attention from competent observers. There are even proposals for local immunisation along strictly chemical lines, the argument being—As you cannot find the cancer germ, you must neutralise the products of this elusive organism. By the way, but little is heard nowadays of the coloured electricity and globules of Count Mattei, though not a dozen years have elapsed since a committee of qualified surgeons and physicians of the highest attainments gravely investigated this "cure" in sober earnest in London.

In the *British Medical Journal* for the 14th February of this year, there were no fewer than eight papers and articles on the subject of cancer, and the May issue of *The Practitioner* is a splendid special number devoted to malignant diseases of the mouth, most of the papers treating of epithelioma and cancer. This is supplementary to the special cancer number published by *The Practitioner* in April 1899.

In the May issue, Sir Thornley Stoker writes on *Cancer of the Lips*. He might almost have used the singular lip, considering how very rarely the upper lip is primarily affected. Reference is made to the *Special Report on Cancer in Ireland*, in which the Registrar-General shows that the cancer mortality of 46 per 10,000 in 1891 has steadily increased to 65 per 10,000 in 1901, and in 1901 there were 63 deaths from lip-cancer amongst 1,296 male deaths from cancer, and 11 deaths from lip-cancer amongst 1,597 female deaths from cancer. Throughout his paper the term cancer is used for epithelioma of the lip. Sir Thornley Stoker considers it inexpedient to operate when the lower jaw has become involved, but he allows no such restriction to stop him when there is merely lymphatic involvement, no matter how extensive it may be. Indeed he cites a case in which he operated five times in a space of a little over two years with excellent ultimate results. The first operation involved removal of a large part of the right cheek and half of both lips, with a complete dissection of the submaxillary space. The last operation required a dissection of the whole length of the right side of the neck from the mastoid process to the clavicle, exposing the carotid sheath throughout its course and also part of the pharynx. Yet the patient is now "in rude health."

Mr W. Whitehead, whose operation for removal of the tongue is the simplest and the safest, contributes a most instructive paper on *Excision of the Tongue for Cancer*, in which he strongly insists on common surgical principles being as applicable to the tongue as to any other tissue or part of the body. Accordingly he will have nothing to do with division of the jaw, the cricaseur, preliminary tracheotomy or preliminary ligature of the lingual arteries, and he urges the greatest simplicity of *technique*, the removal of the tongue with a pair of blunt-ended scissors, without any preliminary or supplementary operations. His results certainly bear

out the faith that is in him. In cancer confined to the tissues of the tongue, carefully excluding all cases of implication of the extraneous muscles and glands, Mr Whitehead has had a series of 116 operations for excision of the entire tongue by scissors with only three deaths, and his last 50 cases have been without a death. Moreover, he can point to patients alive a dozen years after operation.

Mr Whitehead prefers to operate on the patient fixed to an ordinary high-back rocking chair by a common roller towel. There is an excellent series of illustrations showing how the towel is adjusted, and how the patient may be lowered, raised, or kept in the horizontal posture, according to the emergencies of the moment. The operation is described in such clear terms as leave no excuse for the various inaccuracies that have crept into different text-books and journals during the past twenty years. Torsion of vessels is urged in preference to ligation, but a loop of strong ligature is passed through the stump, or through the glosso-epiglottidean fold, to prevent the stump falling back, and in order to facilitate traction in the remote event of secondary hæmorrhage. The use of the well-known varnish is again advocated, and it undoubtedly has a most beneficial effect in the after-treatment of these cases. Mr Whitehead, like Sir Thornley Stoker, favours the most thorough removal of suspicious or infected lymphatic glands, even when it involves excising portions of the common carotid artery, or of the superficial or deep jugular veins, or of the entire sterno-mastoid muscle.

Mr Butlin, having dwelt specially on predisposing and pre-cancerous conditions of the tongue in his article in the number of the *British Medical Journal* already alluded to, devotes his attention in *The Practitioner* to cases involving difficulty in arriving at a correct diagnosis. He describes puzzling cases of irritation ulcers, tertiary syphilitic and tubercular ulcers of the tongue, which were mistaken for epithelioma, or *vice versa*.

Mr Jacobson gives his experience of fifty cases of carcinoma of the tongue, he emphasises the importance of pre-cancerous conditions, and describes the differential diagnosis between these cancerous conditions, as well as the treatment and pathology of the former. He has great faith in the use of the acid nitrate of mercury as a local remedy in cases of obstruc-

tive rawness, excoriation and ulcers of the tongue approaching the pre-cancerous stage. Mr Jacobson, like Mr Hutchinson, Mr Butlin, Mr Whitehead, and most other surgeons, is equally insistent on the dangers of procrastination, and shows how much better it is for the patient to have an early operation performed in cases of doubt, even an extensive operation in the precancerous stage. There is no clearly defined line between the cancerous and pre-cancerous periods. The opportunity for operation is frequently only a brief one, and once lost or neglected the end in store for the patient is one of great suffering and certain death. Mr Jacobson's eloquence will prove excuse enough for the following lengthy quotation:—

"When a firm line is taken and we cease to hedge and hesitate, where our knowledge would lead us to one decision and one only, we shall see fewer of these grievous too-late cases, which as I have said, ultimately make not only the patient, but also those around him, long for the inevitable end. I refer to those cases which have become inoperable, or where from delay even the widest possible operation has been nullified by local persistence of the disease, where the pitiless, incessant aching of tongue, ear, and face, lit up into positive agony by a touch, by the endeavour to say a few words, or by swallowing saliva, render our palliative treatment of no real avail, while by the fætor and the profuse foul salivation the patient is not only a source of poison to himself, but one of noisomeness to others. And I would also mention those cases where, after an extensive, but again too late, operation, though there be no local recurrence, the glands are extensively involved, causing huge, disfiguring masses on each side of the neck, rendering it impossible for the patient to appear in public, especially when, as often happens, epitheliomatous ulceration takes place here also, and dressings are needed. It has happened to more than one of us, probably, in these too-late cases, to hear suicide discussed, and which of us, when watching the closing in of these needlessly lost lives, with week after week bringing days without hope and nights without rest, has not longed earnestly for a wider recognition of the pre-cancerous stage of tongue-cancer and for earlier operations in it?"

Mr Stanley Boyd, in collaboration with Mr Unwin describes a series of 33 cases of

primary cancer of the tongue, arranged in a tabulated form with a commentary

Mr Hutchinson, junior, writes on *The Diagnosis of Epithelioma of the Mouth from Tertiary Syphilitic and other Lesions*, illustrating the article with eight excellent plates of various morbid conditions of the tongue. He is very severe on the text-books for suggesting the diagnosis of epithelioma of the mouth by the presence of hard swollen glands in the neck.

"To expect these enlarged glands in every case of cancer of the mouth, when it first comes under care, is folly, to delay operative treatment until they can be easily felt is a crime." As he truly remarks, it is impossible to pronounce with any certainty about glands under the deep fascia and sternomastoid, where the pulsation of the great vessels helps in obscuring the palpation of glands but slightly involved. It is analogous to the condition of the axillary glands in scirrhous of the mamma. No one can be sure these glands are free from secondary deposits without a dissection.

In leucoplakia of the tongue, where there is the slightest induration or papillomatous growth, operative measures are recommended as being the only safe course while things have not got beyond the pre-cancerous stage.

For dealing with a tumour at the base of the tongue, which encroaches on the epiglottis and yet does not invade the larynx, there are various methods, such as those of Kocher, lateral pharyngotomy, and subhyoid pharyngotomy. But Mr Carless much prefers the procedure of transhyoid pharyngotomy, which was brought to notice by Vallis in 1900. Mr Carless fully describes the operation, and considers it gives an excellent approach to the back of the tongue, pharynx and glottis.

Mr Roughton dwells on the insidiousness of cancer of the mouth, and gives a series of cases in which either the patient felt little or no pain or discomfort, or in which the surgeon, the physician or the dentist missed the diagnosis, or in which suppuration and inflammatory conditions masked the co-existent malignant disease.

Mr D Arcy Power makes a further contribution to his theory on the distribution of cancer in cancer houses and cancer villages. His argument is weak, his sequences somewhat tenuous in their linking-up, and altogether this paper is less convincing than the one he published

four years ago on the same subject. Pfeiffer, Friesinger and Behrens have also made observations on the same lines, viz, cancer houses in insanitary villages in marshy districts, with sluggish streams and ditches containing stagnant and contaminated water, with the alleged consequence of this environment lowering the physique of the inhabitants and rendering their tissues more prone to malignant disease. Were this really the case, we ought to have a great deal more cancer amongst the inhabitants of Eastern Bengal than we actually find to be the case.

According to Mr Jonathan Hutchinson, in the May number of *The Polyclinic*, the bulk of Indian cancer is the result of local irritation, and is met with chiefly in one of three situations, viz (1) cancer of the penis in the uncircumcised Hindu, (2) cancer of the mouth in betel-chewers, (3) cancer of the abdomen or thigh from kangri burns in Kashmir. The rarity of lip cancer he attributes to the European form of tobacco pipe not being used, but it will be interesting to note if the now common use of cigarettes and cigars by natives will make any difference in the incidence of this affection. Mr Hutchinson attributes the rarity of rodent ulcer and of all forms of cancer of the skin of the face to the pigmented skin of the native of India being protected from the irritation of the sun's rays and to the absence of irritation from soap which is comparatively little used. Sunlight and soap he looks on as the chief predisposing causes of rodent ulcer in England.

CANCER IN EUROPE

DR ALFRED WOLFF has an ingenious article in *The Nineteenth Century* for June on *The Increase of Cancer*. He considers the steady increase in mortality from cancer during the last thirty years to be a most remarkable phenomenon, especially as the period is one in which so much hygienic progress has been made.

In England the death-rate from cancer in 1890 was 67.6 per 100,000 living, and in 1900 the rate had increased to 82.8, i.e., roughly, an increase of 4,500 in the annual total of deaths from cancer. Another point is that the proportion of cancer deaths after thirty-five years of age is nearly double the mortality from the same cause prior to that age, viz, 8.5 cancer deaths to

100 deaths from all causes of persons thirty-five years of age and upwards, as compared with 45 cancer deaths to 100 deaths from all causes. The same observations apply to Ireland and other countries in Europe, as appears from the following table —

<i>Death rate from Cancer per 100,000 Living</i>		
	1890	1900
Ireland	46	61
Prussia	45	61
Holland	79	91
Norway	61	84

After analysing a variety of figures for England, France, Germany and Austria the writer draws the following conclusions —

(1) In each country there are distinct areas of cancer mortality, which have been equally well marked for many years

(2) In all districts of high cancer mortality, beer, or cider, is largely consumed

(3) The areas of high cancer mortality comprise well-wooded districts, abounding in streams or lakes

"In fact, this is the chief geographical feature which these divisions have in common. While varying greatly in geological conformation, in elevation, climate and rainfall, the North-Eastern departments of France, the States of Bavaria and Baden in Germany, and the provinces of Salzburg and Tyrol in Austria, as well as the country along the Upper Danube, resemble each other in being the most thickly-wooded portions of their respective countries. It may here, be noted that Sussex and Warwickshire, the best-wooded English counties, are among those having the highest death-rate from cancer." Teutonic and Scandinavian peoples seem much more susceptible to cancer than Celtic and Slavonic races, but in the United States this appears to be reversed. The alleged influence of beer is farther elaborated. In the United Kingdom the consumption of beer rose from 27 gallons per head in 1885 to 31½ gallons in 1900, and in the German Empire during the same period the increase was from 90 to 125 litres per head. We have seen how cancer has increased in both these countries. In Italy and Hungary not much beer is drunk, and the mortality from cancer is far below the average in both countries. In France the wine-growing districts have a low cancer mortality, whereas the departments where much beer and cider are drunk have an excep-

tionally high death-rate from cancer. The same applies to Rouen and Lille, two towns with a high cancer death-rate, and in which the most beer per head is consumed. In Germany the States consuming most beer are Bavaria, Baden, and Wurtemberg, and in all three there is a high cancer-rate. As regards the relation of forest land to cancer, it is noted that the disease is very prevalent in the timber districts of the United States, Norway and Switzerland. The wooded part of Bavaria shows the highest cancer mortality, and the same applies to Baden, which includes the Black Forest. The converse of this is said to hold true. The Canton Ticino, in Switzerland, is nearly deforested, and it shows a low cancer mortality. Dalmatia, in Austria, has no forest land, and it shows the lowest cancer-rate. In England, Sussex, Warwickshire, and Devonshire show a great number of deaths from cancer, whereas the bare lands of the Black Country have about the lowest cancer-rate on the list. In the West of Ireland, which is almost deforested, the death-rate from cancer is also extremely low.

It still remains to be worked out whether the association of cancer with certain nationalities, with certain areas, with certain beverages like beer and cider, with forests and marshes, lakes, and rivers, is merely that of a series of coincidences, or whether these are the conditions which favour the growth and multiplication of a specific organism. It leaves out of account such sources of local irritation as smoking, the chewing habits of various nations, addiction toiced drinks, very hot liquids, spiced foods, and many other things which may predispose the tissues of the alimentary or other systems for the reception of a specific organism, if there be such a causal agent for this malignant disease.

LONDON LETTER

HOSPITAL SUNDAY

A special effort is being made this year to raise money for the London hospitals. The work is increasing yearly, and the funds contributed do not suffice to meet the increased demand. Restrictions have therefore had to be placed on the operations of many institutions. The King and Queen have sought to stimulate the movement by attending a special service at St Paul's Cathedral on the 7th of June on behalf

of the hospitals in anticipation of the General Hospital Sunday, which fell on the 14th of June. A record collection was made on that occasion, amounting to nearly £5,000. The results of the collections of the 14th have not been published.

The hospitals of London require over one million pounds a year to keep them going. In 1901 the income was £1,146,309 exclusive of the hospitals of the Metropolitan Asylums Board, which are supported by the rates. The total was made up as follows —

1 Charitable or voluntary contributions	£ 467,437
2 Income from invested property	„ 283,073
3 Legacies	„ 310,975
4 Patients' payments	„ 84,824
	<hr/> 1,146,309 <hr/>

These figures give percentages of 41, 25, 27 and 7 of the whole derived from these various sources. It has been computed that of every pound received 10s 5d have been contributed by dead benefactors, 8s 2d by the living, and 1s 3d by paying patients. The proportion of the contributions of the living is considered to be meagre as compared with benefactions of the dead. As the benefit of the hospitals is necessarily enjoyed by the living, it is thought—reasonably and justly—that the proportion of living contemporary contributions ought to be larger. By way of urging people to increased liberality, Mr. George Herring has undertaken to add to the collection one-fourth of the amount contributed.

THE WORK OF THE LONDON HOSPITALS

The following statement shows the number and annual work of the various descriptions of hospitals situated in the metropolitan area —

Description	No	Indoor patients	Number of visits by outdoor patients
General hospitals	31	71,314	2,384,190
Special „	60	31,756	1,516,376
Cottage „ and convalescent homes	57	25,904	47,205
Dispensaries	56		1,077,287
Total	204	128,974	5,025,058

These are very large figures and represent an enormous amount of time and labour spent in charitable medical relief. It is sometimes averred that many of the patients who resort to hospitals are by no means paupers and might well afford to pay for private medical attendance. This

is no doubt true, but medical and surgical treatment and appliances are in these days apt to be very elaborate, special and expensive, and it may well be that persons who for ordinary ailments can afford to engage the services of a private doctor cannot face the expense of costly apparatus and prolonged attendance in special circumstances. Besides, such methods as electrical and X-rays processes are best applied in institutions, and even the wealthy resort to private hospitals, of which the number is on the increase. For these reasons it is difficult, if not impossible, to draw the line between the individuals and classes who ought and ought not to apply for charitable relief in hospitals, and as medical science progresses, the difficulty is likely to increase. Therefore, it is that the expectation of larger contributions from the living is reasonable and justifiable.

CURE OF CANCER

Sir Frederick Treves remarked in a recent speech that we were anxiously looking for a cure for cancer, and whether that anxious expectation is or is not to be satisfied in the early future, there is no doubt that a great deal of labour is at the present time being expended on novel methods of treating malignant disease. The methods mostly in use by clinical experimenters are X-rays and high-frequency electrical currents. The evidence published from time to time regarding the results of the employment of these agencies is very conflicting. So far claims of success are restricted to lupus, rodent ulcer and epithelioma. Deep seated and visceral cancer is acknowledged to be beyond the reach of cure by such means. But even as regards external cancer, grave doubts exist as to the possibility of radical cure, and the more patient and honest observers acknowledge failures and recurrences after apparent cure. It seems certain that some skin diseases, *eg*, psoriasis and chronic eczema, are removed by the new light and X-ray therapeutics, and cases of rodent ulcer in an early stage undergo marvellous improvement, which is not always—if ever—permanent. It appears certain also that cancer cases are greatly benefited in many ways by X-ray treatment, chiefly it is conjectured in consequence of the stimulus imparted to the neighbouring healthy tissues. In the *British Medical Journal* of June 6th, a large amount of

most interesting material has been collected and published on this subject. The general effect of the perusal of the number is doubt, and surgical methods, which have of late years undergone such great changes for the better, must still be resorted to and relied upon as the best and perhaps only means of arresting or extirpating cancer in its early stages. There is a great deal of sensationalism and quackery associated with these new proceedings, and the painful truth remains that we are still very ignorant concerning the pathology of malignant disease, and that the present trials are being conducted on purely empirical lines.

17th June, 1903

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Current Topics.

THE CONSCIENTIOUS OBJECTOR

THE Secretary of the Antivaccination League of Milwaukee, U S A, obstinately refused to be vaccinated during an epidemic of small-pox in that city, he was attacked with the disease in a virulent form, and has died from the effects. It is to be hoped that his sad fate may prove a practical object-lesson to others who hold the same views as he did.

We observe that a medical man practising in London, with the diplomas of M R C S (Lond) and L R C P (Edin), has been summoned for refusing to allow his children to be vaccinated.

YELLOW FEVER, MOSQUITOES AND SHIPS

ASSISTANT-SURGEON S B GRUBBS, of the United States, has been making observations at Gulf Quarantine Station of all vessels arriving between 1st June and 1st November, 1902, from *Stegomyia*-infected ports, with a view to ascertain whether there were any mosquitoes on board, and what varieties of mosquito.

The place selected is a good one for these observations, because it is ten miles from the mainland, and because vessels coming there do not pass near land. During these five months 82 vessels were carefully examined for mosquitoes, as they all came from ports where the *Stegomyia fasciata* is supposed to abound. Of the 82 there were 78 sailing vessels and four steamers. On 65 vessels there were no mosquitoes, on five there were mosquitoes on board at the port of departure, on 9 vessels mosquitoes (*Culex*) appeared *en route*, and three vessels arrived with *Stegomyia fasciata* on board. All these three vessels came from Vera Cruz, where both yellow fever and *Stegomyia* exist, on a voyage averaging seventeen days

In the case of one of these three vessels the mosquitoes came on board in large quantities at Vera Cruz, although the ship lay half a mile from the shore, in the second vessel there were no mosquitoes before arrival at Vera Cruz, where quantities came on board half a mile from the shore, in the third case the vessel lay half a mile from Vera Cruz, three-eighths of a mile from an infected prison, and within 200 yards of an infected ship. This third vessel arrived with one case of yellow fever, *Stegomyia fasciata* was found on board before leaving Vera Cruz, as well as larvæ in the water tanks. During the voyage there were mosquitoes all the way, and a regular plague of *Stegomyia* was found in the fore-castle on arrival in port. In the cases of the nine sailing vessels on which *Culex* was found, mosquitoes are stated to have come on board at distances varying from two to fifteen or even twenty miles.

The conclusions arrived at by Assistant-Surgeon Grubbs are that—(1) mosquitoes can come aboard vessels under favourable conditions when the vessel is not over 15 miles from shore, (2) that *Stegomyia* can be carried from Mexican or West Indian ports to those of the Gulf States of America, (3) that the *Stegomyia* can board vessels lying at anchor half a mile or less from the shore, being conveyed by the open lighters used, and (4) that a vessel moored a short distance from land may become infected with yellow fever.

THE SHIP'S DOCTOR

FROM a recent number of *The Lancet* it appears that according to the Merchant Shipping Act, a ship's surgeon is classed as a "seaman." A medical man has lately had an unpleasant experience with the Peninsular and Oriental Steam Navigation Company. In signing the ship's articles as prescribed by the Board of Trade he noticed that the Company had added two by-laws of their own, to one of which he objected. It was to the effect that any member of the crew might be transferred to any other vessel of the Company at any time. On being assured that this by-law would not be enforced, he signed the articles and joined the steamer. On arrival at Shanghai he received orders for transfer to another steamer that was not going home. He refused to obey, and was accordingly prosecuted in the Police Court at Shanghai on a criminal charge. The Magistrate decided against the Company because their by-laws could not override the articles of the Merchant Shipping Act. Then the Company's Solicitors appealed to the Supreme Court of North China and Korea, but the Chief Justice dismissed the appeal with costs. The P & O Company next applied for permission to appeal to the Privy Council in London. This was granted, provided the Company paid all the costs of the appeal, includ-

ing a sum not exceeding £150 for the costs of the respondent in London. On reaching home the medical man instructed his solicitors to bring an action against the Company in the High Court, London, claiming damages for malicious prosecution.

The Company's defence appears to have been that they did not prefer any complaint or appeal, that if such complaint or appeal was preferred, it was done without authority, and that no malice was intended. While denying liability the defendants lodged £555 in Court as sufficient for the plaintiff's claim. This sum was taken out of Court by the plaintiff, whose taxed costs were also paid by the Company. Accordingly the case did not come up for a public hearing in Court.

THE INTERNATIONAL MEDICAL CONGRESS AT MADRID

THE delegates and visitors to the Congress appear to have had a very uncomfortable time, owing to inadequate accommodation and extortionate charges. Somebody blundered.

BALRAMPUR HOSPITAL, LUCKNOW

A NEW block, with five suites of rooms, has been added to the Balrampur Hospital, Lucknow, for the use of European patients paying Rs 3 *per diem*. This is an example which, we hope, will be followed by other hospitals in the provinces in places where there are many Europeans.

A smaller block has also been built for Indian patients, who will be charged Rs 10 *per mensem*. In the latter, each room has separate arrangements for cooking and washing purposes, so that the female relatives of a patient can tend him with due regard to their privacy. This is also an excellent move, which deserves success. A large operating theatre is in course of construction. It is largely owing to the liberality of the Maharaja of Balrampur that the Civil Surgeon, Lieutenant-Colonel J. Anderson, I.M.S., has been able to effect these improvements.

SCARLATINA IN KITTENS

Dr E. RAPIN, of Geneva, has come across two instances, in which young kittens, closely associated with children suffering from scarlatina, were similarly infected. The kittens became very ill, had fever, rosy skin and a bright red tongue, the fur was shed, and there was branny desquamation of the epidermis.

ACT FOR THE SALE OF ANTITOXINS

CONGRESS has passed an Act to regulate the sale of viruses, serums, toxins, and analogous products in Columbia, and to regulate interstate traffic in the same. The Surgeon-Generals of the Army, of the Navy, and of the Public Health and Marine Hospital Service have been constituted

as a Board to formulate regulations from time to time. Licenses are issued, suspended or revoked by the Secretary of the Treasury upon the recommendation of the Public Health and Marine Hospital Service. All establishments for the preparation and sale of serums, &c, are liable to inspection by duly appointed officials, and the licenses have to be renewed every year only after re-inspection. There are numerous strict rules laid down for these inspections. This is a move in the right direction, because it is of the utmost importance that everything should be above suspicion in the preparation of these fluids, where any carelessness or slovenliness may lead to such disastrous results. Such State regulation should prove a healthy check on quackery, and the production of various preparations that can only bring serumtherapy into discredit. If it is necessary to control the sale of drugs, it is even more important to control the issue of cholera, plague, diphtheria and tetanus antitoxins.

IPECACUANHA

FROM the last annual report of the Royal Botanic Garden, Calcutta, it appears that the difficulties connected with the cultivation and propagation of *Ipecacuanha* have been overcome, and that there is some prospect of India becoming self-supporting as regards this valuable drug. Another plant, *Ixora Coccinea*, var *Bandhuca*, has been studied with a view to supplying the indigenous drug *Rangan*, which is said to be used for the same purposes.

I. M. S. PAY AND LEAVE CHART

OFFICERS of the Indian Medical Service in civil employ will find much useful information regarding the nature and amount of allowances of their various appointments throughout India, travelling allowance, acting allowances, leave and leave allowances, in the chart published by Mr E. C. Dozey, Superintendent, Office of the Accountant-General, Bengal.

DRUG HABITS.

THAT there may be worse things than opium the anti-opium fanatics of Great Britain and of the United States have yet to learn, in spite of the victims of alcohol, venereal diseases, morphine, chloral, cocaine and many other vicious habits that abound in their cities. It appears that the opium restrictions in Burma, which are probably both wise and necessary, are tending to induce the Burmese and Chinese opium-eaters of Rangoon to resort to morphine. It is reported that one native was found in possession of morphine sufficient for 35,000 full doses.

Dr George P. Dale, lecturing on *Morphine and Cocaine Intoxication* as reported in *The Journal of the American Medical Association*

for the 2nd May, should give the anti opium faction cause to set their house in order, for he states as follows — "The case with which morphine and cocaine can be purchased from the druggist without a physician's prescription is appalling. Some druggists in the 'tenderloin districts' rely largely on these sales to keep up their volume of business, and some have even said they could not exist if it were not for the sale of cocaine. They keep it put up in 10 and 25 cent packages, and all the user has to do is to ask for 10 cents worth of 'coke,' and he gets it, and the all-night stores in these districts do a flourishing business in this commodity. The sales of morphine and cocaine in small quantities have been very much on the increase in the past three years, and those who once become users will, at the majority of cases, continue, and the number using them is daily increasing. Usually these sales are not even registered, as is required in many States when poisons are sold, but are dispensed as any non-poisonous drug. I cannot give the druggist all the censure, but some physicians and many quacks must take due credit for hasty or thoughtless dispensing or prescribing." This same Dr Dale quotes a Police Superintendent of ripe experience as saying that "the opium habit furnishes an incentive to more crime than any vice to which unfortunate humanity can be addicted, also that opium increases crime and is the real cause of at least four-fifths of all the offences committed." Again this Superintendent is reported to have said that "the opium habit is the greatest incentive in the commission of crimes that require cunning, boldness and treachery." We very much doubt whether opium heads the criminal register in America, at any rate it cannot be said even to compete with alcohol in the crimes of Great Britain. In India opium certainly does not have such a preponderating influence for evil amongst the peoples of various districts or provinces where the drug is taken openly and without shame as a luxury, to ease the burden of toil, to ward off fever, to lessen the pains of rheumatism or syphilis, for the relief of lung diseases and bowel complaints, or merely from the desire to do the same as their friends, as is often the case with thoughtless or weak-minded folk. Crimes of violence against the person are not commonly the result of opium, it leads rather to theft, petty larceny, embezzlement, forgery and offences against the Excise Acts, either on the way of smuggling opium, selling it without a license, or manufacturing "chandu."

LIVING ANIMALS USED IN KAVIRAJI TREATMENT

BABU S S Bose, of Calcutta, has sent us a communication on *Live Beasts as Remedial Agents*. We regret it cannot be inserted *in extenso*, because of its length and owing to the facetious strain in which it is couched. How-

ever it tends to prove that India is a free country, and that any one may practise medicine in whatsoever manner seems good to him or her, as long as he or she does not run foul of Exeter Hall and the repeal of the C.D. Act, or of the anti vivisectionists, the anti-vaccination people, the anti-opium folk, and others of a kindred nature.

Babu S S Bose informs us that seventy years ago there was a Board of Kaviages who were specialists in the "animal cure," and that Kaviages often kill five hundred sparrows at a time to make a ghri for diabetes. As examples of the living animals used he gives the following — Asthma treated by a ghri called *Chhagaladya Ghrita*, prepared from goat's flesh, and by the external application of a live goat thrice daily. The patient had to inhale the pungent goat's smell, using the goat as a pillow, putting it on his chest, or hugging it. For a headache a large snake was coiled round the throbbing temples, the snake having first been rendered innocuous. For a bone stuck in a patient's throat a mangy cat was tied round the patient's neck, with the result that vomiting occurred, and the bone was dislodged. For retention of urine a frog was fixed over the umbilicus of the patient, with alleged successful results.

DISINFECTION

DISINFECTION by fumigation, or the diffusion of certain gases in an enclosed area, has for long been a common practice in India, and Army Regulations, India, Vol VI, give full directions for the use of chlorine, nitrous oxide and sulphurous acid gases. The Clayton method for disinfection of ships consists of an exhaust pipe to remove foul air and an inlet pipe to supply an admixture of SO₂ and SO₃. Mr E H Hankin did good service with his *brochure* on *Cholera in Indian Cantonments*, in which he insisted strongly on the simplest forms of disinfection by the heat and light of the sun's rays, and by boiling or burning. Recently heat desiccation is coming more prominently to the fore, and the Punjab Government have adopted the desiccator invented by Dr Sawhney, and now Dr Thornton has devised a new desiccator which he considers an improvement on Sawhney's patent. We publish Dr Thornton's description, and also the instructions issued by the Sanitary Commissioner of Bengal for the use of Dr Sawhney's patent desiccator.

INDIAN MILK SUPPLY

MAJOR D SIMPSON, I.M.S., has done well in drawing attention to the parlous conditions in which milk is supplied from native sources. We have seen dairies much worse than any described in Major Simpson's paper in an Indian city larger than Madras. In the course of duty we had to draw attention officially to

certain dreadful daries where the cows were so crowded and so tightly tethered that they could scarcely move from a standing to a recumbent posture, or *vice versa*. Their excrement overflowed from the sheds into a pit or tank containing a quagmire of excreta seven feet deep by about forty feet long. A Civilian of the status of a Divisional Commissioner investigated the matter afterwards, and opined in a tender-hearted way that the report was unduly hard on the poor native darymen who know no better, though he endorsed the facts as stated. On another occasion we were asked to see a wealthy native dary proprietor in consultation for erysipelas supervening on supuration of the foot. He lived in the midst of his dary, it was situated in the heart of the city, and the surroundings were indescribably filthy. On asking the native medical practitioner who accompanied us whether no one from the Sanitary or Health Departments ever visited the place, he replied — "Yes, they do, and this man proves a veritable gold mine to them. He prefers filth, and he pays from Rs 200 to 300 per mensem for hush-money!" As to the truth of such a statement we cannot vouch, but there was no doubt of the terrible filth of the place, which could only have resulted from the dary remaining unmolested by cleansing methods for years.

MAJOR SIMPSON says that all large hospitals and similar establishments in India are obliged to have recourse to the plan of having cows brought to the place and milked there in the presence of some responsible person. The Presidency General Hospital, Calcutta, for many years had a large number of cows housed in the extensive hospital compound, but the cows belonged to *goalas*, and the milk was supplied through a native contractor. The result was most unsatisfactory. Of quite recent years this hospital has a very stringent contract with a dary run by a European on European principles, and the milk is sterilised and supplied twice a day in a special hospital van. This method has proved a signal success, and is one that can be heartily recommended. If you want good and pure milk you must abolish the *guala* and all his evil ways.

THE abolition of the *guala* was successfully carried out after a good deal of trouble at the Dallanda Asylum, Calcutta. This institution has a good dairy with fine cows and buffaloes, and it used to be managed by *goalas*. They resented some interference with their customs and perquisites, and retaliated by making the cows abort the calves die, one cow break its leg, and in various other vexatious and expensive ways. So it was determined to dismiss the *goalas*, and to work the dairy entirely with asylum labour. The first result was the poisoning of a lunatic who was doing most useful work in the dairy.

It was effected by the *goalas*, through the agency of a high-caste warder who was in disgrace at the time, and the drug used was *Cannabis Indica*. The whole warder staff was employed in relays throughout an entire night in resuscitating the unfortunate lunatic, who eventually recovered. This event made the Asylum authorities all the more determined to exclude the *goalas*, and this was accomplished through the zeal and energy of the Deputy Superintendent, who trained warders and lunatics to carry out all the dairy duties.

Review

Legal Medicine and Toxicology in India,
Vol II—Illustrative Cases—By Major COLLIS
BARRY, IMS, FRSF, FIC THACKER & Co,
Bombay

THE first volume on Legal Medicine was reviewed in the *I M G* for October, 1902. This second volume forms a worthy supplement to this work, and contains references to no fewer than 4,295 cases, the compilation and condensation of which must have proved a most laborious task. The book as now completed should prove of the greatest use for handy reference both by medical men and lawyers in India. It has altogether outgrown the original idea of merely being a textbook for students in the Indian Medical Colleges.

The illustrative cases are grouped into chapters under different headings, such as signs of death, identity, age, sex, sexual questions, divorce, rape, unnatural offences, pregnancy, legitimacy, abortion, live birth, infanticide, drowning, hanging, strangulation, suffocation, starvation, cold, heat, burns and scalds, explosives, electricity, injuries to the various regions of the body, gunshot wounds, fractures and dislocations, malpractice, insurance, insanity, drunkenness, hypnotism, and judicial procedure. After this comprehensive list of headings we have a section specially devoted to cases of poisoning. These are all carefully tabulated so as to furnish the reference number, sex, age, dose, result, references in books and journals, and lastly some condensed notes summarising each case. In addition to this there is an excellent index at the end of the book, so that the reader who consults this book has things made easy for him in the matter of rapid reference. What Major Collis Barry has accomplished for Bombay we hope to see other members of the Indian Medical Service do for Bengal, Madras, the Punjab, the United Provinces and for Burma, from the rich stores of material that are obtainable in India.

Chart for Officers of the Indian Medical Service in Civil Employ By E. C. DOZRY
Price Rs 2

We welcome the appearance of any publication that will simplify the intricacies of the

pay and leave code as applicable to the officers of the Indian Medical Service. This chart is prepared by one who is well versed in the complicated rules of the Accountant-General's Department, the writer being the Superintendent in that office. This should ensure accuracy. We do not quite see the necessity for publishing the information in the form of a folded up chart pasted on cloth. We think that ordinary pages in book form would have been more convenient, and possibly the author will take the hint in his next issue. The chart consists of six sections or pages containing:—I—A list of the pay and appointments in the different provinces. II—Pay of rank, unemployed pay, and pay of Civil and Residency Surgeons. III—Allowances, acting and miscellaneous. IV—Travelling allowances. V—Leave, and the method of calculating it. VI—Leave allowances.

This enterprising writer is publishing a chart on travelling allowance as affecting all officers in civil employ, and special charts concerning the regulations for the Police, Judicial, and Subordinate Executive Departments.

Practical Hints on the Preservation of Health in India—By Lieut Col GEORGE S. A. RANKING, M.D., M.R.C.S., I.M.S. Thacker, Spink & Co, Calcutta.

THIS brochure contains much sound advice for the young subaltern, civilian, or merchant's assistant as to how to take care of himself during the first years after his arrival in India, which is set forth in simple terms and in a very readable form by an observer with a long experience of India and an extensive acquaintance of the youthful Britisher. The practical difficulty seems to be that the youth is much more likely to purchase or to consult books on the management of horses and dogs in India than to read or to follow advice as to his own health. Possibly Colonels of regiments, District Magistrates, or heads of firms could be of assistance in directing the attention of youngsters to such a little book as this, and influencing them to follow its precepts. There are excellent hints on sleep, exercise, diet, drinks, clothing and head-gear. There are chapters on the treatment of common ailments and injuries, and, lastly, there is a list of drugs and prescriptions, and directions for the cooking of simple foods for use in the sick room.

Public Health Laboratory Work—By HENRY R. KENWOOD, M.B., D.P.H., F.C.S. H. K. LEWIS 136, Gower Street, London. Third Edition, 1903. Price 10s. 6d.

THE second edition of this book on public health laboratory work, belonging to Lewis's Practical Series, was reviewed in the columns of the *Indian Medical Gazette* in July 1896. Then we remarked that the last part on the bacteriological examination of air and water, &c., might have had more space devoted to it,

considering the immense importance of modern developments in this particular branch of study. We are glad to report that this blemish has been removed, and that under the hands of Dr W. G. Savage this section has developed from the twenty pages of the second edition into nearly 140 pages of this edition. It now treats of the bacteriological examination of water, air, soil, food and food products, determination of antiseptic and germicidal power, tuberculosis, diphtheria, typhoid fever, cholera, plague, anthrax, anaerobes, and an useful appendix for the preparation of media, stains, sections and other matters of practical laboratory importance. The rest of the work has also undergone most thorough revision. Though a good deal of new matter has been added, and the descriptions of various processes have been substituted by others, yet Mr Kenwood is to be congratulated on having been able to limit his material to much the same amount of space as in the former edition. It is a matter of comfort and convenience to have a laboratory book of a handy size such as this one. An unwieldy book gives trouble, and wastes time and energy. The demand for a third edition is evidence of the appreciation of those who are studying for Public Health degrees and diplomas, and proves that they appreciate a book which shows them how best to perform the laboratory work usually included in a syllabus of practical hygiene. Both authors and publishers may be well satisfied with the production of such an excellent edition of a work that has earned for itself such a good reputation amongst the students of practical hygiene.

Practical Handbook of the Pathology of the Skin—By J. M. H. MACLEOD, M.A., M.D., M.R.C.P.

THE publication of a work of this description, the first to appear in our language, is an indication of the advance of medical science and its demands for special information on special subjects. A few years ago such a work could scarcely have justified its existence. Now it will be looked upon as an indispensable occupant of the Dermatologist's bookshelves. The author does not claim to have produced a complete treatise on the pathology of the skin, but merely a "practical introduction to the Anatomy, Pathology, and Bacteriology of the Skin." Consequently he deals first minutely with the histology of the different elements of the skin, and then describes the changes which take place in them in disease. Very careful instructions are given for the preservation and examination of portions of the skin, but we consider it hardly necessary, in a special work of this sort, for the author to go so minutely into general histological technique, as this part seems to be only a repetition of what the reader will find in

any of the ordinary text-books on pathological histology. The chapters on parasitic diseases of the skin are well written and up-to-date, and form a valuable summary of our knowledge of this part of the subject. The book is well got up and clearly printed, and the coloured and uncoloured plates are excellent.

Diseases of the Pancreas and their Surgical Treatment—By A W MAIIO ROBSON, F.R.C.S., and B G A MOYNIHAN, M.S. (Lond.), F.R.C.S. Illustrated, pp 293. Philadelphia and London W B SAUNDERS & Co., 1903.

THIS work is dedicated 'to the surgeons of America in cordial recognition of their work,' and to complete the compliment is published by Messrs W B Saunders & Co of Philadelphia. It is written in clear style and with the wealth of clinical illustration we expect from the authors of that excellent monograph on Diseases of the Stomach, noticed not long ago in these columns. The Leeds surgeons have published this book with a two fold object—to record and to review the work done in the past, and to indicate, as far as is possible, the scope and trend of future research. Our knowledge of diseases of the pancreas is recent and incomplete, but every year adds to it, and adds, we may say, not only to our respect for the usefulness of the gland when healthy, but for its powers of mischief when disordered. Diseases of it which a few years ago were not suspected are now frequently—by no means always—diagnosed correctly, and subjected to surgical treatment with successful results. A book of this kind should be read by every surgeon wishing to keep his knowledge up to date, as the authors say, 'The admirable works of Korte and Oser, the fruitful researches of Opie and others into the functions and significance of the islands of Langerhans, the observations lately made as to the causation and treatment of acute and chronic pancreatitis,—have all attracted much attention from the profession, and have excited a keener interest in the pathology and treatment of the diseases of this gland.'

In the present state of our knowledge, we suppose it is inevitable that clinical cases should be quoted at length, but they add materially to the bulk of the volume. References are given as they are used, but we think it would have helped others had they been collected, or given only, at the end of each chapter. The illustrations are good, and the book does great credit to its publishers.

A NEW DESICCATOR FOR PLAGUE DISINFECTION

By E N THORNTON, M.R.C.S. (Eng.), ETC.,
Late District Plague Medical Officer, Gujarat

For some months Sawhney's Desiccators have been in constant use in the Gujarat District, but

for the following reasons have not been found satisfactory

(1) They only attain a floor temperature of 130° F

(2) They burn charcoal, which is an expensive fuel

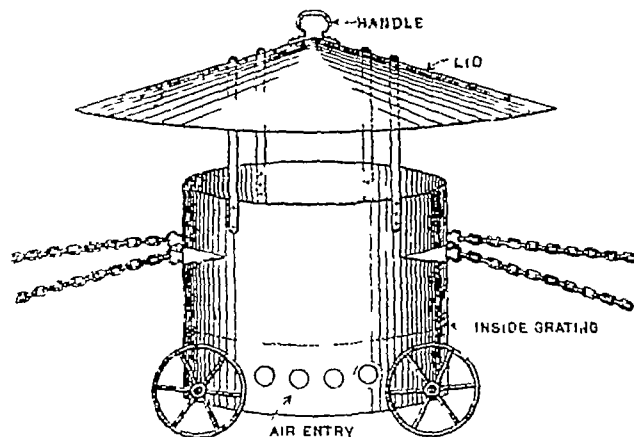
(3) Twelve cases of carbon monoxide poisoning have occurred, (a) by the gas filtering through to adjoining houses, (b) from coolies having to enter a room in which one is working because it is throwing off sparks, and so threatening a conflagration

(4) To meet No 3 objection, it is necessary or at least wise to have the working under medical supervision, hence an expensive staff

(5) It is not readily portable

(6) High initial cost owing to heavy royalty

To obviate these objections, I designed and worked a new desiccator which from its appearance I have called the "Lampshade". I venture to think its success has been so pronounced, that it is worthy of notice by the profession in India, the more so as it is at present the only plague desiccator that reaches the bacteriological ideal as regards temperatures



This gives a floor temperature of 150° to 165° in 30 minutes to 50 minutes, according to the size of the room. It burns wood, from 7 to 12 seers, is readily portable, and no chance of carbonic oxide poisoning can exist.

The non lid throws the heat on to the floor, and moreover does away with all possibility of a conflagration.

To get the temperature required, the fire must be kept blazing brightly, and additional fuel added every twenty minutes. To do this, it is not necessary to enter the room. A piece of rope should have been tied to the chain and left by the door. When it is necessary to stoke, the stove can be pulled to the opened door and then pushed back, and the door again closed.

If a test tube containing a little paraffin wax of a melting point of 148° to 150° was utilized instead of a thermometer, any villager could use the desiccator, and no staff would be required.

It costs about Rs 22 to make, and there is, of course, no royalty to pay on it.

Desiccation and Desiccators

Desiccation is the disinfection, by means of dry heat, of plague infected dwellings and effects. It may be carried out in two ways, by means of "Dr. Sawhney's Patent Desiccators," or by means of burning cowdung fires on floors in shut-up rooms. The former method is recommended as most convenient and safest. The desiccators can be bought from Messrs N D Hannam and Brothers, Rawal Pindi, at Rs 40 each.

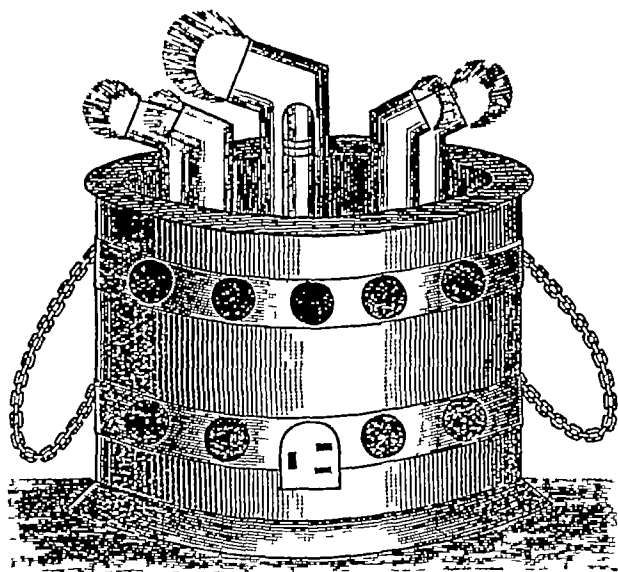
Advantages of Desiccation

The advantages claimed for disinfection by means of strong artificial heat, are --

- (i) The extreme simplicity of the operation and its comparative cheapness, because large bodies of disinfectors are not necessary.
- (ii) The ease with which the fuel can be obtained everywhere and at all times.
- (iii) That all parts of the dwellings are reached, viz, floors, walls, ceilings, roofs, and all recesses and places, which might serve for the reception of plague germs.

Principle of the Desiccator

The principle of this machine is to draw air into its lower, bottom, or air-chamber by means of a number of inlet flues. From the air-chamber the air passes up into the upper or fire-chamber where it becomes heated. Heated air is then drawn out into the room sought to be desiccated by means of another set of flues fixed in the lid.



The heated surface of the desiccator, which, with the exception of the air-chamber, becomes red hot when in full swing and sufficiently charged with fuel, also imparts heat to the room and its contents by radiation and reflection.

Description of the Desiccators

The desiccator consists of an iron cylinder with a lower or air-chamber into which opens a number of straight inlet flues and an upper or fire-chamber with a removable lid at the top provided with a set of bent flues.

The fuel (which should be either charcoal, firewood, dry cowdung cakes or coal) is piled on a grate which divides the air from the fire-chamber. The air-chamber is provided with a door for the removal of ashes. When left open this door enhances the blast. The fire-chamber has also a door which allows of the desiccator being recharged while at work, the first charge being more easily made from the top by taking off the lid.

How to use the Desiccator

After having been charged with fuel and the fire lighted, the desiccator may remain in the open air for a few minutes with the air-chamber door open, in order to give the fire a good start. The machine is then carried into the room to be desiccated on a long pole passed through the two side chains.

Registration of temperature and time required for each desiccation

Observation has shown that plague germs are intolerant of high degrees of heat, natural or artificial, so when the desiccator is placed in the room, due care should be taken to see that all doors, windows and ventilators are shut up, and to raise the temperature of the room to 158° F, and to maintain this standard for not less than 30 minutes in each case. The temperature can be tested by means of sun thermometers.

Desiccation of clothes, etc

Where desiccators are employed, clothes, etc, should be hung on ropes inside the rooms, and so arranged as to allow the hot air a free play over all parts of them, particular care being taken to open up all bundles. No trouble need be taken in case of new clothes in locked-up boxes, beyond throwing open the lid to admit hot air into the interior of the box. The other household effects in the room should, in the same way, be left undisturbed. The desiccator causes no damage whatever to clothes, coloured or otherwise. Where open heap fires are used the household effects should be removed from the room and placed in the yard.

Old and dirty quilts and bedding as well as body linen of plague patients should, as a rule, be destroyed, compensation being paid in each case.

The Desiccator serves a double purpose

When lighted and placed in an infected room, the desiccator disinfects the room as well as the articles in it at the same time. The machine has been so designed that there is little or no risk of the room or its contents catching fire. The

desiccator may also be used as an incinerator for burning rags, etc., soiled with plague and cholera discharges, or discharges of other diseases of infectious nature

General Desiccation

In villages where desiccators may not be available, general desiccation can be carried on by means of burning cowdung fires, the cowdung cakes being arranged in heaps varying in number according to the size of the room, the doors, windows and crevices of which should all be closed up. If cowdung cakes are not available, firewood or charcoal or combinations of both, may be employed. The temperature of the room should be raised to 158° F and tested by thermometers. Where this process is used, the household effects and other contents should be removed from the room and placed in the yard, with a view to prevent their being damaged by fire.

EXTRACTS FROM MEDICAL JOURNALS MEDICINE

A Case of Splenic Anæmia with Excision of the Spleen.—Dr Peacocke (*Dublin Journ Med Science* for April 1903) relates a case of splenic anæmia, for which splenectomy was performed with apparent benefit. The patient was a farmer, aged 45, previously healthy. Symptoms were noticed for some six months before admission, viz., gradually increasing weakness, breathlessness and enlargement of the abdomen. On examination a large splenic tumor was felt, extending down to within two inches of the crest of the ilium, and a friction rub was heard and felt over it. Blood examination—red corpuscles, 4,250,000, hæmoglobin, 60 per cent, leucocytes, 1 in 1000, differential count of leucocytes per cent—eosinophiles, 4, polymorphonuclears, 39, mononuclears, 4, lymphocytes, 53. There was no history of malaria or syphilis, and no evidence of cirrhosis of the liver. Arsenic was at first tried in increasing doses, but as the patient became worse and the anæmia increased, it was decided to remove the spleen. Great difficulty was experienced in the operation owing to numerous adhesions, but the patient made a good recovery, and is said to have taken a walk of 10 miles 7 weeks after the operation. The condition of the blood rapidly improved—red corpuscles, 4,400,000, and hæmoglobin, 75 per cent—a month after, leucocytes, 1 in 800. Within a few months of the operation, the patient expressed himself as feeling better than ever he had felt in his life and was able for hard work. Seven months after the operation he had increased 2 stones in weight, and blood examination gave red corpuscles, 4,400,000, and a few normoblasts hæmoglobin, 85 per cent, leucocytes, 6,000, polymorphonuclears, 61 per cent, mononuclears, 6, lymphocytes, 21, eosinophiles, 12. The spleen weighed 8 lbs 2 oz, and the increase in size seemed to be due entirely to great enlargement of the Malpighian corpuscles, there being no increase in the thickness of the trabeculae.

Under the name of **Banti's Disease** another case of splenic anæmia is described by Dr Michell Clarke in the *Bristol Med Chir Journ* for March 1903, in which the anæmia was much more profound, and the usual tendency to hæmorrhage of this disease was observed. The patient, a servant girl, aged 19, had noticed enlargement of the abdomen four years previously which was found to be due to enlarged spleen, and she had suffered from weakness and anæmia. On admis-

sion, after a severe hæmatemesis, red corpuscles only numbered 1,171,000, leucocytes, 7,473, hæmoglobin, 12 per cent, spleen enormously enlarged, not tender, no friction heard over it, some fluid in peritoneum, no hepatic enlargement. The leucocytes were made up of polymorphonuclears 58 per cent, large mononuclears, 11, lymphocytes, 28, and eosinophiles, 3. The fluid in the abdomen contained some blood, and there was urobilin in the urine and a trace of albumen. Later the liver became enlarged. The patient died after a severe attack of diarrhœa, high fever, and vomiting of five pints of blood. The chief changes found in the spleen were increase in the trabeculae and fibrous tissue, proliferation of the endothelium of the vessels, and a relative decrease in the number of Malpighian corpuscles. It weighed 3 lbs 13 oz. There was slight cirrhosis of the liver. There were large varicose veins round the cardiac orifice of the stomach, and the hæmorrhage had taken place from erosion of one of these.

Hæmoptysis an initial sign of Pleurisy—

Dr F H Edgeworth (*Brist Med Chir Journ*) draws attention to hæmoptysis as an occasional early sign of pleurisy and discusses its causation. He states that it comes on with the onset of fever and pain, but seldom lasts more than a day or two. In cases of simple pleurisy, it is thought to be independent of a pneumonic patch, embolism or a tubercular lesion, and to be due to hyperæmia and rupture of capillary vessels of the lung immediately under the inflamed patch of pleura.

Peroxide of Hydrogen in the treatment of

Septicæmia.—In the *St Louis Med and Surg Journ*, April 1903, Dr E J Melville speaks favourably of H_2O_2 in the treatment locally of foul abscess cavities. Two cases of fæcal abscess were treated with injections of lotions of H_2O_2 . The discharge lost its fætor, diminished in amount, and the temperature which had previously been high soon returned to the normal. No untoward results followed.

Thiocol in the treatment of Pulmonary

Tuberculosis.—Dr Fuchs, of Vienna, recommends this drug in the treatment of consumption. Thiocol is the active constituent of creosote, and its active ingredient is guaiacol; its formula is put down as $C_6H_3(OH)(OC_2H_5)(SO_3K)$ —the potassium salt of ortho guaiacol sulpho acid. It is easily soluble in water, is non irritating and is easily absorbed. The doses were three to six grains a day and, so far from disturbing the digestion, this function actually improved under its use, and at the same time there was an increase in weight. The drug appears to have all the advantages of creosote without its disadvantages.

Agurin.—This drug is recommended in cardiac dropsy by Dr James Burnett (*Therapeutist*, April 1903). It is a compound of soda theobromine and acetate of soda. Notes of several cases are given in which agurin was given, and in which the secretion of urine rapidly increased in amount, the dropsy diminishing also. It is recommended especially in cardiac dropsy, commencing in 10 grain doses thrice daily. It seems to increase the solids of the urine also.

Somnoform in Dental Practice.—In the *Medical Press* of 22nd April 1903, Dr T Percy C Kirkpatrick contributes an interesting paper on the use of this anæsthetic in dental practice. Its composition is chloride of ethyl C_2H_5Cl 60 parts, chloride of methyl CH_3Cl 35 parts and bromide of ethyl C_2H_5Br 5 parts, each of which has been separately used from time to time as an anæsthetic. From a considerable number of trials Dr Kirkpatrick concludes as follows as to its advantages—(1) the apparatus required for inhalation is simple and portable, (2) it is instantaneous in action, (3) it is rapidly eliminated, and the effects soon pass off, and (4) it is safe both in the beginning, during and after operation. The anæsthesia is produced in less than a minute and last for two minutes.

The same journal also contains a clinical lecture on **Tetany** by Dr Louis Guimon. The subject of the lecture was a little girl aged $4\frac{1}{2}$ in whom the affection developed after an attack of scarlatina associated with diphtheria and followed by a general septic condition. M. Guimon regards his case as caused by toxic infection. It was a typical example of tetany of moderate severity, with the characteristic attitude of the forearms and fingers, tetanic stiffness increasing at times, and the symptoms of Trousseau and Weiss and Choostek. A form of tetany called pseudo tetanus is described, in which the symptoms very closely resemble those of true tetanus, and M. Guimon considers that many cases diagnosed as tetanus neonatorum are in reality examples of this form of tetany.

Trunczek's Serum Dr Alfred Gordon writes on the value of this preparation in the treatment of functional disturbances of the brain caused by circulatory changes (*Philadelphia Medical Journal*, 21st March 1903). Though called a "serum" the preparation is really only a solution of salts in distilled water, viz, sodium chloride 4.92 gr., sodium sulphate 0.41 gr., sodium carbonate 0.21 gr., potassium sulphate 0.40 gr., distilled water to 100 c.c. Trunczek administered this solution hypodermically or intravenously for the treatment of symptoms caused by arterio sclerosis with the idea that the combination of salts would act as a solvent of the calcium phosphate deposited in the intima of the diseased arteries, and would assist in the regeneration of the endothelium of these vessels. Dr Gordon reports twelve cases of disturbances of the cerebral functions mostly from circulatory changes in which the administration of this serum internally was in nine out of the twelve cases followed by the relief of the symptoms. Though it failed in some of the cases, he considers it should be tried in such cases in which iodides and nitrites fail to give relief.

In the *Pacific Medical Journal* for April 1903, Dr H B Stanley recommends nitroglycerine in the treatment of pneumonia. He gives $\frac{1}{100}$ to $\frac{1}{50}$ grain every four hours from the appearance of the first symptoms until the crisis, and says that whereas the mortality of his cases was previously 5 per cent since he began this treatment, his mortality has gone down to under 1 per cent.

A case of Bradycardia is recorded by Dr Lucien Lofton in the *Pacific Medical Journal*, March 1903. The subject of this condition was a healthy coloured man aged 29. The rate of the heart beats was 44 standing, 40 sitting and 32 to 33 lying down. He had no complaints referable to the heart was not aware of his condition.

Strychnine in the treatment of Tic Dou loureux.—Two cases are reported by Dr Chas S Potts (*Universal Pennsylvania Medical Bulletin* for April, 1903) in which the patients, both females, had suffered for years. In both cases strychnine was given hypodermically commencing with $\frac{1}{30}$ gr once daily, gradually increased to $\frac{1}{4}$ gr. In both cases the pain was rapidly relieved, but in one it recurred in a few weeks.

Association of Tabes and Multiple Sclerosis—Dr Charles J. Addrich reports such a case in the *Philadelphia Medical Journal*, 25th April 1903. The patient, a male, aged 53, had contracted syphilis thirteen years previously, and first complaints were loss of sexual power, paroxysmal localized pain in the wrist, and later lightning pains in the extremities, unsteadiness of gait, laryngeal crises, and very great sensitiveness to thermal impression. The gait was tabetic, all tendon reflexes wanting, absence of sense of locality and intentional tremors, hyperæsthesia in places, fixed pupils, no optic atrophy. Some nystagmus, and complete adductor and partial adductor, laryngeal paralysis with partial paralysis of the crico arytenoid laterales.

F J D.

SPECIAL SENSES

In the *Recueil d'Ophthalmologie* for March 1903, Dr Bouchart describes a case of DEEPERSED CATARACT of nine years' standing in which the remains of the lens issued spontaneously during an iridectomy performed for leucoma. The patient, an Arab, had lost the right eye entirely, and had had the left 'couched'. There was a central opacity in the middle of its cornea a c deep. Iris not tremulous. Pupil well dilated. Tension normal though the author remarks that in adult and aged Arabs the rigidity and sclerosis of the eye tunics often give one an idea of tension higher than in reality. $V = \frac{1}{10}$ to $\frac{1}{100}$. Fundus appeared normal as far as it could be seen. Iridectomy was decided on and begun. The iris was rigid and could not be seized. While attempting it a whitish opaque soft mass passed through the pupil into the anterior chamber, and, being seized with forceps, was drawn out without difficulty. It turned out to be a membranous sac containing a lens nucleus. The iridectomy was abandoned and eserine and sterilised iodoform vaselin applied with a bandage. The case did well, and on the sixth day diopim was used to assist to reabsorb the leucoma. Vision improved to about $\frac{1}{10}$. The author mentions that the operators produce a partial anaesthesia by a sort of hypnosis caused by monotonous and continuous incantations and religious signs. The cataract pricker of India goes one better and now uses cocaine. In the same journal is an abstract of paper by Dr Sucker, of Chicago, asking if depression of extract is ever justifiable, and deciding that in his opinion it is absolutely indicated in numerous conditions, which he names, and which agree fairly with those enumerated by Mr Henry Power in his paper on the same subject at the *British Medical Association Meeting* 1901 (see *British Medical Journal* 191, p 1260). The after results of 63 cases of depression of lens by Indian cataract prickers are given in a paper by Maynard appearing in the *Ophthalmic Review* for April 1903. Of the 63, 39 obtained good vision and retained it for an average period of 4.88 years. The results were better in cases where the depressed lens had become fixed than where it had remained movable. Removal of couched lenses was considered not advisable unless attempted very soon after depression. The paper concludes with a report of the microscopical examination of a couched eye by Mr J Herbert Parsons, Curator at Moorfields.

In *La Clinique Ophthalmologique*, 1902, appears a paper on 'Inflation of air in the anterior chamber in tuberculous of the iris and cornea,' by Dr Feha of Leiden. It is based on the known good results of exposure of the peritoneum to air in cases of tubercular peritonitis. Professor Koster, of Leiden, instigated the research. The results have been satisfactory, and such as to warrant further trial. The technique is simple. After drawing off some of the aqueous humour by means of a discission needle, air, sterilised by being drawn through sterile cotton, is injected into the anterior chamber through the needle of a Pravaz syringe inserted through the same puncture in the cornea. Enough air is introduced to fill the anterior chamber. Reaction lasts twenty four hours, and the air is absorbed and replaced by aqueous humour in three or four days.

The Giant Magnet in Ophthalmic Surgery—Dr Connor of Detroit, has a paper with this title in his *Journal of the American Medical Association* for March 21st, 1903, in which, after relating two cases he makes some useful remarks on the best method of utilising the magnet. The great power of the magnet renders it capable of irreparable harm if wrongly directed, and of infinite good if rightly. Experimental work and clinical evidence show that at contact and up to 2 mm the power of the small magnet equals, if not surpasses the giant, but from this distance to 10 mm the power of

the giant increases in almost geometrical ratio. Only small splinters, which can be actually touched by the magnet, are suitable for the use of the small magnet, the large being necessary for all others. Haab, who introduced the latter, uses it for all cases. It is wise to either (1) bring the eye close to the magnet before starting the current and increase its power very slowly, or (2) bring the eye from a considerable distance towards the point of the magnet with full current very gradually. Where the current cannot be regulated, the latter method only can be adopted. If the splinter gets imbedded in the ciliary body or iris, the other pole of the magnet can be used if it be a double ended magnet, or a strabismus hook can be passed in and made to draw the splinter away from its position in the desired direction.

The failure of the magnet in Haab's practice when it has failed he attributes to (1) firm fixation of the splinter in the posterior walls of the eyeball, (2) firm fixation in the ciliary body, (3) fixation in a fibrinous exudate, (4) splinter healed over in the lapse of months. In 165 operations in ten years Haab reports 23 failures, 39 eyes were enucleated, 9 had lingering cyclitis, 19 were saved from inflammation but were sightless. Of 71 cataracts extracted, 51 had good vision. The X rays and the sideroscope have much increased our powers of localization and aided the magnet.

F P MAYNARD

DISEASES OF WOMEN AND CHILDREN

Flat foot in Children

An article on Flat Foot in Infants and Children is contributed by Dr Lovett of Boston, for the April number of the *Journal of the American Medical Association*.

He quotes the investigation of Dane to prove that a normal arch exists at birth, but that in well nourished children a pad of fat is present in the sole of the foot which fills up the natural hollow of the foot and leads to the appearance of flat foot. He notices that children rarely complain of pain, but walk with feet wide apart and are somewhat unsteady in their gait. This condition is by no means confined to weakly infants, but often seen in those of the most robust and heavily built type. Dr Lovett is strongly in favour of shoes with a straight inner edge, more room in front, and which tend to hold the foot adducted rather than in a position of abduction. He holds that it is inadvisable to let the little patient run about in bare feet owing to the fact that the muscles in question are already fatigued, and require support rather than further freedom. For treatment he only recommends a well shaped shoe, in more serious cases a graduated pad of leather or felt should be incorporated in the leather inner sole which raises the arch of the foot and holds it on the outer border.

In the severer cases a flat foot plate of metal or celluloid is required, the latter has the advantage of being lighter and is sufficiently resistant. For the most severe cases some outward pull on the inner malleolus is required which can be obtained by a steel sole plate joined at the ankle to an upright running up the outer side of the leg. The writer is also strongly in favour of massage to the muscles of the calf and sole.

Infant feeding

Dr Christaers Douglas is responsible for an excellent article in the May number of the *Glasgow Medical Journal* on some questions bearing on infant feeding dealt with in the light of recent observations.

He has found on several occasions that an analysis of the milk from nursing mothers has been able to throw light on the cause of malnutrition of the infant. In one case there was a reduction of fat to 55 per cent of the normal, the milk sugar being also reduced. He

does not hold with the idea of giving undiluted milk to infants, he is very strong upon the importance of fatty foods in the infant dietary on account of their action in aiding the absorption from the bowel of the salts of calcium and magnesium. He deals with Koch's remarkable statement regarding bovine and human tuberculosis, and questions Dr Arthur Latham's paper on "The Etiology of Tuberculosis", also the experiments of Professor Orth (Virchow's successor at Berlin) who succeeded in infecting five animals out of nine by means of human tuberculosis sputa.

As regards the sterilisation of milk, Dr Douglas considers that all milk used for infants under one year should be pasteurised for fully 40 minutes at 70° 6' (158° F) which will not affect the quality of milk and also destroys the organism of typhoid and of diphtheria.

The writer holds that on no account should any preservative agent be added to milk.

As regards those very trying and difficult cases in which the child vomits after feeding, he holds that 5 minims of the liquor peppina just before each, or at any rate alternate bottles is best, but that an intestinal antiseptic such as sodium salicylate gr $\frac{1}{2}$ —1 three times daily is indicated if pain appears about an hour after food with abdominal distension and the passage of undigested curd.

The writer has a high opinion of Horlick's malted milk, and considers that unsweetened condensed milk should not be contemptuously referred to as "milk jam," but is sometimes useful especially for temporary employment.

Fatal Vaginal Douches

Dr G DeN Hough contributes two cases of death from a single vaginal douche in the April number of the *Boston Medical and Surgical Journal*, they are worth recording to show how things should not be done.

Case I—Mrs J, aged thirty three. On Monday, March 10, this woman, who was between three and four months pregnant, miscarried. The next morning she was given a douche of 1 to 1000 corrosive sublimate, one quart. There is some doubt as to whether she received any more douches. On Thursday, March 13th, her tongue was greatly swollen, mouth extremely sore, she was salivated and had a severe diarrhoea. The whole mucus lining of the mouth became gangrenous, and towards the end of her life, the sloughs having separated, quite profuse hæmorrhage took place. Diarrhoea continued, apparently but little influenced by medication, and she finally died of exhaustion on March 26th, fifteen days after receiving the douche. The autopsy showed numerous small ulcers in the ascending and descending colon, kidneys half as large again as normal, the uterus contained a soft adherent spherical mass, as large as half a hen's egg, which appeared to be a placental fragment, and which was proved to be such by microscopical examination.

The microscopical examination confirmed the naked eye diagnosis—ulcerative stomatitis, ulcerative colitis and acute parenchymatous nephritis. The bichloride douche was given by her grandmother, an old negro nurse thoroughly accustomed to administering douches, who was, at the time that I talked with her, not absolutely certain, but was strongly of the opinion that she had given the girl but the one douche.

Case II—Mrs S, aged thirty five, sarcoma of the uterus. Vaginal hysterectomy was performed on April 3rd, 1902. The patient was in poor general condition before as well as after the operation. On April 6th the vaginal gauze was removed, and a douche of peroxide of hydrogen was given. The following day the picking of the vaginoperitoneal wound was removed, and a douche of a dilute formalin solution was given. It was impossible to ascertain the exact strength of this solution. It may have been as strong as 1 to 1000, or it may have been as weak as 1 to 5000. This

douche caused the patient severe pain, and soon after it was given she passed into a condition of collapse, and in spite of vigorous stimulation died in a few hours.

A careful autopsy was performed, and absolutely nothing was found to account for the death. I believe that the irritant action of the formalin on the peritoneal surface (there can be no doubt that the formalin solution penetrated to the peritoneal cavity) caused the pain, and pain so severe that the patient, in her weak condition, was thrown into the condition of shock, from which she died.

Unconscious Pregnancy—Dr Jones of Ibrox, reports the following interesting case in the April number of the *Glasgow Medical Journal*.

A few days ago I was sent for in urgency to remove a placenta which had been retained *in utero* for a period of about three hours. The placenta gave me no trouble, but the story of the mother, who is a very respectable woman, took me by surprise. She informed me that her first baby, now sixteen months old, was still on the breast, that she did not know that she was carrying a second child, and that about an hour and a half before the baby was born she felt a little uncomfortable, but had no pain. She thought that her discomfort was due to wind, and did not for one moment suspect anything in the shape of labour. Not until baby announced his arrival did she realise for the first time that she had been pregnant. Her husband stated that he "heard no word of anything till he saw the child." The baby was to all appearance a full time child.

Parotitis following Abdominal Section—Morley (W. H.), *American Gynecology*, 1902, No 6, p 609—This writer reports the case of a woman, aged 21, whose pelvis was drained by an anterior vaginal incision on account of inflammatory trouble. Three days later double pyo salpinx was treated by removal of the tubes through an abdominal incision. The appendix was also removed. Pulse and temperature remained high. A week later a swelling appeared below the angle of the right jaw. The abdominal wound suppurated and a drainage tube was inserted. The bacillus coli communis was isolated from the pus. Meanwhile the swelling of the parotid had increased, and showed fluctuation 15 days after the abdominal operation. Two days later, incision gave exit to four ounces of pus containing the staphylococcus pyogenes aureus. Recovery was then uneventful.

The writer has collected 51 similar cases, 44 of the patients being females. There were 28 ovariectomies, the other 23 operations were all upon abdominal and pelvic viscera. "Incubation" varied from two to twelve days. Both sides were affected in 16 cases. Suppuration occurred in 20 of the cases. Thirteen patients died. Paget remarked that the gland suppurated because the patient was going to die, and not *vice versa*.

Morley concludes that there is an intimate relation between the parotid gland and the abdominal and pelvic viscera. This relation probably exists through the medium of the sympathetic nervous system. Suppuration in these cases is determined by the local conditions in the gland. The patient's life is not endangered by the suppuration *per se*. The appearance of the parotitis usually marks a turning point in the disease. A table of the fifty one cases is given, and an extensive bibliography is added. The reports of most of the cases are wanting in bacteriological data, so that the writer is unable to form any conclusion on this aspect of the subject. Bumm isolated the staphylococcus pyogenes aureus in one case. The germs are thought to travel from the mouth, and infect the gland when its resistance has been lowered by congestion. The congestion is thought to be due to reflex irritation or over stimulation of the gland caused by disturbances in the abdominal and pelvic viscera. The secretion of the gland is

lessened or stopped. The same process may afford an explanation of the excessive thirst and dryness of the mouth complained of after laparotomy and especially after ovariectomy.

J W F R

Transactions of Medical Societies.

THE ASSOCIATION OF MILITARY SURGEONS IN THE UNITED STATES OF AMERICA

THE EXECUTIVE ELEMENT IN THE TRAINING AND SKILL OF THE ARMY SURGEON

By JOHN NELSON GOLTRA, A. M., M. D.,
Contract Surgeon in the United States Army

I DESIRE to say at the outset that in preparing this paper I have been confronted with the thought that I am addressing myself to men who are many times better able to speak upon this subject than I am.

In the language of one whose effort has often been held up as one of the very greatest examples of oratory, "I can but tell you that which you yourselves do know," and yet matters that are well known are sometimes benefited by formal statement and discussion. It is desired that these remarks be understood to apply, not to garrison or even department duties, which are already admirably worked out, but to field and division hospital assignments—such conditions as are likely to arise under military operations. Without further explanation or comment I proceed to my first proposition, namely:

I.—The duties of an Army Surgeon are largely administrative.

This item of executive skill is the one component of which least may have been thought by either the appointing power or the appointee when the assignment to some certain duty or field service was made, but when the work is done and the account taken, *it or the lack of it* will always be found to have entered largely into the grand resultant of his success or failure. Especially is this true of those duties pertaining to the higher ranks. A man may be preeminent as a sanitarian, especially skilled in bacteriology and biology, a peerless surgeon, and withal he may be thoroughly conversant with the requirements of the Regulations, and yet not fulfill wholly the expectations and wishes of the Surgeon-General when military operations are under way.

Reports of the sanitary condition and low death rate of troops now in the Philippines, show that both Medical and Line officers are making good use of the knowledge gained in the severe schooling of the past four years. That this may be best preserved, that the knowledge and experience of veterans of the corps, unfortunately so soon to retire, may accrue to the newer men coming into the corps, and that still further advances and still better methods of training may be evolved is precisely the object of this paper.

A man is only what he is trained to be. However much genius may sometimes come to the aid of the unschooled, it can never take the place of training. It is too uncertain, too rare, and could not,

even if possessed, fit a man for this duties. By *executive faculty* is meant that habit which consists, not in doing the work one's self, but in seeing that the right man does it at the right time and in the right way. Nor, still further, does it consist in *giving orders*, but rather in establishing such a condition of affairs that each man, whether the range of his responsibility be wide or narrow, gives the orders suitable to his especial station, and sees that they are executed. It is not always the man who *works the hardest that accomplishes the most*. Too much depends upon the direction of his efforts—his *business tactics*—in other words, his appreciation of the *executive principle*. It fosters the *esprit de corps*, and by it a man is able to wield strong influence where he is not. For this reason it is essential in the putting into effect of those complex methods used to prevent the spread of contagion. Chance and uncertainty must surely be as far eliminated as may be, for direful possibilities are hovering too near. Therefore—

II—*The duties of the Army Surgeon demand, and requirements fully justify, the widest practical training it is possible to give him*

And this is profoundly true, for the following reasons—

A. The enemy encountered by the Medical Corps is the deadliest one of all. It has become well established as a rule that armies in active service suffer much more and sustain much greater losses from disease than from wounds received in battle. But the extent of this disparity does not seem to be understood and appreciated by any but army surgeons themselves.

To arrive at a fair estimate of it, it is obvious that figures relating to wars other than those of recent times are useless. Taking note of those at hand of the last half century, we find that the ratio of deaths from disease to that from casualties is approximately as follows—

In the Crimean War, 1854	4 to 1
In the Civil War, 1861-5 (North)	2 to 1
In the Civil War, " " (South)	3 to 1
In the Austro-Prussian War, 1866	14 to 1
In the Franco-German War, 1870-1 (exception)	1 to 1
In the Russo-Turkish War, 1878	74 to 1
In the War of the French in Madagascar, 1896	500 to 1
In the Spanish-American War, 1898, about	8 to 1

Leaving out of account as a monstrosity, the Franco-Madagascar War, the general average of these figures is 4 to 1.

Again—

B. Given a disciplined army, the *effectiveness* of troops in action is measured largely by their health and vigor, and this depends in no small degree upon sanitary regulations. Disregarding for the nonce the humanitarian phase of the question, the dead soldier, as a burden, is only exceeded by the sick soldier. The same also may be said of him as a breeder and disseminator of contagion. As has been well said, "The infirm soldier cripples the command of which he is supposed to be an effective instead of a burdensome part, and the care of him requires men, money, and transportation facilities needed for other purposes. Had officers and men, during the mobilization of the army for the Spanish-American War, been as vigilant and careful in the preservation

of their own health and vigor as they were eager to get to the front, it is safe to say that the non-efficiency rate and the total death rate would not have been anywhere near as large as they were.

With better executive training, more authority must come to the Surgeon in sanitary matters. He must not be guilty of too much official modesty, but must *magnify his office*.

C. The great problems of the etiology, transmission and prophylaxis of disease epidemics, so destructive to life in military movements, are worked out wholly by the Medical Officer. While it may be too early to say absolutely that these questions concerning yellow fever have reached their final solution, yet indications point decidedly that way. And if our country received from the Spanish-American war no other bequest, it would be amply justified by this one splendid result.

In view of these facts recent legislation concerning the Medical Corps must be regarded as "short-sighted" to put it in mildest terms.

Provision is made by the Government for the education even from boyhood of the Line Officer, but the Surgeon must first educate himself and then none but the best need apply. Should he then and with equal financial and official responsibility be offered only a volunteer commission, and be unceremoniously dropped when the Government is through with his services, when he is to serve side by side with a Line Officer of the permanent establishment, whose longevity, pay and retired pay are guaranteed, and whose commission cannot be taken away except for cause?

Again, the Surgeon is exposed, not only to the dangers of the firing line in common with his brother officers, but also to those of infection and contagion, fourfold more destructive as the figures show. Should then a niggardly policy be pursued toward him? That legislation which cripples and stultifies the Medical Corps takes rapid steps toward diminishing the effectiveness of the army.

In Captain Munson's splendid work on Military Hygiene, and more explicitly in that very excellent chapter on "Military Mortality and Morbidity" is shown by a painstaking study of the death and non-efficiency rates for very many of the more recent wars, an array of facts which we have no right to regard as indifferently and discuss as coolly as we do. These serve to confirm the conclusions of one's more limited observations, namely

(a) That periods of inactivity during hostilities are more destructive to both the health and the life of the soldier than are times of actual campaigning,

(b) That the death rate from disease is apt to be several times larger during hostilities than it is in times of peace, and

(c) That the increase in both the death and non-effective rate even in the ranks of the Regular Army, is due almost wholly to the increase in infective diseases, general and local.

These conditions are accounted for partly by the fact that, with the raising of new regiments, unseasoned troops are brought into the field, and with them come surgeons and assistant surgeons whose training in sanitary and military matters is not what it should be. But they cannot thus be fully explained, for the statistics given by the author just

quoted show nearly the same ratio of increase for the Regular Army

If some means could be devised or methods adopted for constituting and training a Reserve Medical Corps it would pay, for an untrained, or even a half-trained Medical Officer is by the very nature of things an ally of the enemy

Some of the causes which operate to produce the results abovementioned are not under man's control, such for instance as inclemencies of the weather, diminished vitality from exposure, and unhealthy locality,—but other causes ought to be

I do not propose to arraign nor yet to offer apology for the administration of any Medical Officer. The record speaks, and generally, if not always, tells of good and faithful work under the conditions. Each did the best he could, but most of us, I fancy, are conscious of a feeling that we could do better next time. Might we not have been so trained that we could have done better the first time? And this leads me to say

III—*To the greater degree of authority of the Army Surgeon should be added a better Executive Training*

The Army Medical School is a splendid conception. It serves to make more thorough the professional skill and the scientific training which was and is and ever shall be of paramount importance. But it reaches only the younger men of the corps, and the demands of the service are such that comparatively few can take the course. If its special instruction in military hygiene and sanitary subjects could be supplemented by a careful study of the duties of management of some of our large city and state hospitals, with complete report of such study, its benefits would be multiplied. Much advantage would also accrue to both the department and the Surgeon if the latter could be detailed to make brief but thorough examinations into and report upon the business methods and details of management of large civil hospitals, and even of the modern department store as well. I once asked the head of a great department store, the stock of which was being constantly distributed by an army of delivery wagons and is pleted by train-loads of boxes, how he managed this enormous business without visible jar or loss, and he replied "System, Doctor, system! That is our secret, and we could not run a week without it"

The Surgeon ought to be able quickly to establish a Regimental Field or Division Hospital on a business basis. He should be allowed to look after the transportation of his own supplies, and should be held responsible if they are not at hand when needed.

There is a serious limitation to the efforts of the Surgeon which ought to be mentioned here. The wisdom of the Hospital Corps, as a separate arm, is evident. It has been oft demonstrated. But the Surgeon, of whom results are expected, is not allowed to employ or choose his men. They are assigned to him. Nevertheless his success depends to a fairly large degree upon their individual intelligence and faithfulness. In the Regiment the Company is the unit. But in the Hospital Corps the Private is the unit.

He is the ultimate representative of the Surgeon. In his first aid duties and at the bedside more than ordinary mental alertness is required.

Therefore he should be of a higher grade of intelligence and stronger purpose than the average man, and to secure this should be better paid.

The Surgeon cannot be too exacting in the training of the Hospital Corps, and he should be allowed to weed out those found incapable of receiving the necessary training. Executive ability consists quite as much in getting rid of an incompetent man as it does in calling forth the best services of a good man.

Understand me, I do not mean to insinuate for a moment that all these things,—and better than these—have not been considered by those in authority of the Medical Department. But when you and I begin to talk of them, to urge them, to discuss and to educate, then we shall become the better able to hold up the hands of those who strive for better things, and to help to secure the necessary and much needed legislation.

(To be continued)

Correspondence.

CATARACT OPERATIONS A CORRECTION

To the Editor, "THE INDIAN MEDICAL GAZETTE"

SIR,—I write the following lines to point out an error in the long and exhaustive paper I wrote on the subject of Cataract Extraction in the Government Ophthalmic Hospital, Madras, in the Special Ophthalmic Number, June 1901. I regret very much that there has been so long a delay in pointing out the error, but the special number came into my possession just when I was proceeding to Europe on furlough in 1901, and I did not notice it, until I had reached Berlin, where, at Professor Hirschberg's kind invitation, I read a paper on the subject of Cataract Extraction, using my copy of the paper for reference. The original manuscript was left in Madras, and could not be then produced to shew the error. The article itself was printed in the *Gazette* from a typewritten copy of the original, which I had not time to revise, and no proof was ever corrected. In my manuscript I had written as follows—"It often happens that in the Madras Hospital, one has a run of 100 successful cases etc." In the *Indian Medical Gazette*, June 1901, page 201, the number is stated to be 300. On my return from furlough in February 1902, I intended to write at once to the *Gazette*, but I must apologize for my culpable procrastination in not doing so before. I began to write another paper in November last year for the *Indian Medical Gazette*, and it is still in course of preparation. In the first few lines of this paper I have acknowledged the error, but as the paper may take yet some time to be finished, I delay no longer in making the correction. The statement of a run of even 100 successful cases was made by me, while thinking of the extraordinarily large "whole number" of cases operated on, and without any special reference to statistics, and certainly with no intention of exaggerating my own successes. My professional friends who know me, and my work, will understand this. In fact although, I believe, I have read of other surgeons, who have had a successful run of 100, 200, and even 400 successful cases, I doubt whether I can ever record a single continuous successful 100. Here I must repeat, what I have often written before, that a successful case in my practice means an eye, that can, after operation, see well and read print. The statistics compiled at the end of the paper in 1901 in the *Gazette* shew distinctly what the actual results of operations on cataract were for the few years previous, and as they give precise and accurate information as to "successes and failures," I may be excused the wholly unintentional inaccurate statement, the correction of which I now clearly make.

Moreover the real aim and object of the statement thus made is shown in the passage following it, viz, "the success seems phenomenal, but immediately following this four or five cases fail, either from suppuration or severe irido-cyclitis or some unknown cause, and so the average at once falls." I have not stated that there was any phenomenal success at all. The passage here quoted shews at once I trust, to your readers that my object was to point out that in a large institution such as the Madras Ophthalmic, one

may have a very large run of successful cases (stating as I did from careless memory, and inadvertence, in round numbers "100"), and then the *seemingly* phenomenal success is entirely marred by four or five egregious failures. In writing as I did, I was not quoting regular statistical numbers to exaggerate my success in the operation, but, as any intelligent reader must observe, to show that small numbers of operations, and their results, and statistics formed on them, are not "a fair estimate of the real success obtained by an individual surgeon" (vide *Indian Medical Gazette* page 261, column 2, line 38)

I remain, &c.,

T H POPE, M D,

LIEUTENANT COLONEL, I M S,

Superintendent, Government Ophthalmic Hospital, Madras

BANGALORE,

13th June 1903

REPORT ON SANITATION, DISPENSARIES AND JAILS IN RAJPUTANA FOR 1901 AND ON VACCINATION FOR THE YEAR 1901 1902

The report was prepared by Lieutenant-Colonel D French Mullen, M D, I M S, Residency Surgeon and Chief Medical Officer in Rajputana. There are three Residency Surgeons at Jodhpur, Jaipur and Udaipur, four Agency Surgeons at Alwar, Bharatpur, Kotah and Deoli, and two Civil Surgeons at Ajmir and Bikanir. The Civil Surgeon, Ajmir, is Medical Officer of the Merwara Battalion, the Agency Surgeon, Haroti and Tonk, is Medical Officer of the Deoli Irregular Force, the Medical Officer, Mewar Bhil Corps, is the Civil Surgeon, Dungarpur, and Superintendent of the Civil Dispensaries of Kotra and Kharwara, and the Medical Officer of the Eranpura Irregular Force inspects the Sheogunj Dispensary.

One Civil Medical Officer and one Warrant Medical Officer were employed on plague duty. Two Assistant Surgeons are permanently at Ajmir and Beawar, three at Jodhpur, four at Jaipur, one at Bharatpur, one in Bikanir, and one at Jhalrapatan. There were twenty two permanent Hospital Assistants employed by the British Government, and 134 qualified Hospital Assistants were lent by Government for permanent work, with an additional reserve of fourteen more for plague, famine and cholera duty. Four Lady Doctors and eight Female Hospital Assistants were employed, and there are at present seven vacancies for female medical subordinates in Rajputana.

There are now 166 hospitals and dispensaries in Rajputana, in which there were treated 1,192,907 patients of all classes, of which 17,599 were in-door patients. Malarial fevers and diseases of the spleen formed 21.67 per cent of all diseases treated, ulcers 9.3 per cent, skin diseases 9 per cent., of diseases of the eye 8.46 per cent., and diseases of the lungs 7.57 per cent. Four hundred and seventy six cases of leprosy were treated. Scurvy, probably associated with conditions of scarcity or famine, appears not uncommon in Rajputana. There were 2,359 cases in 1900 and 1,843 cases in 1901. Small pox appeared in nine States with a mortality of 680 as compared with 3,051 deaths from this scourge in 1900. Almost the entire population of the village of Karnikote were inoculated for plague, there being 1,278 inoculations in one month.

The surgical operations numbered 61,164 with only 66 deaths. There were 953 extractions of the lens, 83 lithotomies and 119 litholapaxies.

The mortality of many of the jails was high. Ajmir Central Jail compared unfavourably in this respect with the jails of Alwar, Bharatpur and Bikanir. The mortality in several jails is attributed to overcrowding and defects in construction and drainage. It has been suggested to start a Central Asylum at Ajmir, to be supported by contributions from all the Native States.

REPORT ON THE POLITICAL ADMINISTRATION OF THE TERRITORIES WITHIN THE CENTRAL INDIA AGENCY FOR 1901 1902

THERE is very little of medical interest in this report. Owing to deficient rainfall there was scarcity, for which relief works were provided. The States under report were Gwalior, Indore, Bhopal, Bhopawar, Malwa, Bhagelkhand, Bundelkhand and the Dewas State. In the Indore State the Maharaja Tukaji Rao Hospital was opened. The total expenditure on hospitals and dispensaries was Rs 72,000, whilst the army cost the State twelve lakhs. There was comparatively little epidemic disease in Central India, and plague, which was prevalent in some of the adjoining districts of the United Provinces and of the Bombay Presidency, did not cross the border. Asbestos and large deposits of manganese have been found in the Bhopawar territory.

Service Notes

THE B M J for the 23rd May, 1903, claims credit for the amelioration of the lot of the R. A. M. C. officers which all R. A. M. C. officers will gratefully acknowledge. "That the scheme is now working satisfactorily is to our mind shown by the fact that, whereas the complaints of the officers in the service filled our Dionysian 'ear' as with the clamour of a multitude, now only a stray whisper of a grievance makes itself heard from time to time. A Saturnian reign of peace has indeed come upon the service."

WOULD that the same could be said of the Indian Medical Service, but so far we hear nothing of the pay of I M S. officers being readjusted to correspond with the different rates of pay of the R. A. M. C. In the past we have known of privileges being taken away from the I M S. to equalise the conditions of the two services, when the R. A. M. C. complained that they had not something which the I M S. possessed.

Most I M S. officers are exiles throughout their service, whilst the R. A. M. C. officer is more or less a bird of passage as far as Indian service goes. Yet the rates of pay are now distinctly in favour of the R. A. M. C. though their work can not be described or classed as more important or responsible, or filling up more time than that of the I M S. officer in civil employ. In the case of an I M S. officer in military employ, the band, regimental, mess and fund subscriptions are deducted from his pay.

	I M S				R. A. M. C.		
	Military		Civil		Pay	Charge Allowance	Total
	Pay	Substantive Charge	Second Class	First Class			
Lieutenant	350	450	400	500	420	—	—
Captain, under 5 years	350	450	400	510	475	—	—
Captain, over 5 years	450	600	550	650	—	—	—
Captain, over 7 years	450	600	550	650	530	—	—
Captain, over 10 years	500	600	550	650	650	60	710
Major	640	800	750	850	790	120	910
Major, over 15 years	677	800	750	850	825	180	1,005
Lieutenant Colonel	852	1,000	950	1,050	1,060	180	1,240
Lieutenant-Colonel (selected)	—	—	—	—	1,150	240	1,390

PROMOTIONS from Lieutenant Colonels to Colonels, I M S. —

M D Moriarty, M D, dated 25th October 1902

B O'Brien, dated 1st November 1902.

W R Browne, M D, dated 19th May 1903

RETIREMENTS — Lieutenant Colonels A J O'Hara and A W F Street, D S O, both I M S., dated respectively, 2nd November 1902 and 2nd April 1903

THE services of Lieutenant N S Wells and of Captain D H F Cowin, both I M S., are placed respectively at the disposal, temporarily, of the Governments of Bengal and of the Punjab

DURING the absence of Lieutenant-Colonel J C Fullerton, I M S., Major P J Lumsden, I M S., will act as Agency Surgeon and Administrative Medical Officer in Baluchistan

CAPTAIN W E SCOTT MONGRIEFF, M B, I M S., is posted as Agency Surgeon in Kota and Jhalawar

LIEUTENANT COLONEL A. M. CROFTS, C I E, I M S., Agency Surgeon in Gwalior, is granted two years' furlough

CAPTAIN R P WILSON, I M S., acts as Deputy Sanitary Commissioner Metropolitan and Eastern Bengal Circle, during the absence of Captain A F Stevens, I M S.

COLONEL A F DOBSON, I M S, is appointed P M O Bangalore and Southern Districts, and Colonel W R Browne, M D, I M S, is confirmed as P M O, Madras District.

LIEUTENANT COLONEL D P MACDONALD, M D, I M S, will retire from the service on the 6th July

CAPTAIN F N WINDSOR, M B, I M S, officiates as Chemical Examiner and Professor of Chemistry, Medical College, Lahore, whilst Lieutenant-Colonel D St J D Grant, M B, I M S, acts in the same capacity in Calcutta.

CAPTAIN G TATE, M B, I M S, acts as Civil Surgeon of Peshawar, during the absence of Lieutenant Colonel G W P Denny, I M S, on three months' leave

LIEUTENANT COLONEL C C VAID, I M S, Mainpuri, is granted two years' furlough

MAJOR E G R. WHITCOMBE, I M S, has been appointed to act as Civil Surgeon, Jacobabad, in addition to his own duties. Major J B Smith, I M S, acts as Civil Surgeon, Belgium

SURGEON GENERALS will wear a blue serge frock as for General Officers, but with gorget patches of black velvet instead of scarlet cloth

INSTRUCTIONS FOR THE FREER UTILISATION OF FIELD HOSPITAL STORES —

The half yearly renewals of condensed milk and annual renewals of other preserved foods should be regularly carried out in accordance with paragraph 822, Field Service Departmental Code, Commissariat Transport. Arrowroot should be renewed annually. No article of field equipment should be removed on any pretence whatever without immediately replacing it by a corresponding fresh one

Supply Transport Officers in charge of mobilisation stores should furnish a certificate to the District Principal Medical Officers, for the information of the General Officer Commanding that the renewal of these stores has been fully carried out, stating what articles have not been dealt with in this way, if any. Lists of medical comforts turned over from mobilisation stock, through the periodical renewals, should be at once furnished by Supply Transport Officers in charge of mobilisation stores, to Principal Medical Officers of districts who will detail the quantities to be distributed to the hospitals under them. In mobilisation areas where the turn over is larger than can be utilised in this way, the matter should be reported to the Inspector General of Supply and Transport of the Command, with the view to the transfer of the surplus stores to stations where they can be expended

Medical officers in charge of hospitals, British and Native Troops, will accept these stores (in lieu of fresh ones) as substitutes for diet ingredients and extras. District Principal Medical Officers at annual and other inspections, will satisfy themselves that these instructions are carried out.

Articles of bedding and clothing should be regularly turned over before signs of deterioration appear, and thus avoid loss from their becoming mildewed or moth eaten through prolonged storage. As clothing is of the same pattern as that in use in hospitals, there should be no difficulty in its turn over. It should therefore be utilised to replenish the stock of station and regimental hospitals

MR. E J SIMPSON to be Civil Surgeon of Jalaun, on being relieved of the Superintendentship of the Central Prison, Bareilly

MAJOR J GARVIE, I M S, to be Civil Surgeon of Sitapur and Captain W H Orr, I M S, to be transferred from Sitapur to Mainpuri

CAPTAIN K V KUKDAY, I M S, to be Cantonment Magistrate Bhuj, in addition to his other duties, with the powers of a Small Cause Court Judge and a Magistrate of the first class within cantonment limits

LIEUTENANT COLONEL C F WILLIS M D, I M S, is granted leave for one year

LIEUTENANT COLONEL K S NARIMAN, I M S, is appointed Deputy Sanitary Commissioner, Western Registration District

LIEUTENANT COLONEL A V ANDERSON, I M S, is appointed Deputy Sanitary Commissioner, Central Registration District.

SURGEON MAJOR W C BEEVOR, M B, O M G, R A M C, Scots Guards, to be Medical Officer on the staff of H E the Governor of Bombay

THE services of Captain G O F Sealy, I M S, Special Plague Medical Officer, Nagpur, are replaced at the disposal of the Government of India, and then at the disposal of H E the Commander in Chief in India

LIEUTENANT COLONEL G BOMFORD, M D, C L E, I M S, is granted six months' furlough, and Major F J Drury, M B, I M S, officiates for him as Principal and Professor of Medicine, Medical College, Calcutta and First Physician, College Hospital, while Captain H B Meakin, M D, I M S, acts for Major F J Drury I M S, as Professor of Pathology, Medical College, Calcutta

CAPTAIN MEAKIN has been obliged to take sick leave, and Captain Clayton Lane acts in his place at the Medical College

THE services of Captain G King, M B, I M S, are placed temporarily at the disposal of the Chief Commissioner of the Central Provinces, and a similar notification concerning Captain C F Weinman, M B, I M S, is cancelled

MAJOR P CARR WHITE, M B, Captain R. F Standage, and Captain J H Hugo, M B, D S O, all I M S officers, are confirmed as Agency Surgeons of the 2nd class, under the Foreign Department. Captain J Fisher, M B, D S O, I M S, is appointed *sub pro tem* an Agency Surgeon of the 2nd class

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

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BOOKS, REPORTS, &c, RECEIVED

A Manual of Plague. By Major W E Jennings, I M S (Rebman, Ltd London, 1903) Price 8s
Protozoa and Disease, Part I, 1903. By J Jackson Clark, M B. (London.) (Baillière, Tindall & Cox) Price 7s 6d
Manual of Medicine. By T K Monro, M A, M D University Series (Baillière, Tindall & Cox, 1903) Demy 8vo, pp XX and 901 38 Illustrations Price 15s
Administrative Report on the Jails of Bengal for 1902. By Major W J Buchanan, I M S.
Hygienic Laboratory Bulletin No 8 Laboratory Course in Pathology and Bacteriology. By M J Rosenau, Director of Hygienic Laboratory.
The Agricultural Ledger (1) Acrididae A Plague of Grasshoppers in the Central Provinces. By Stewart Stockman, Civil Vety Dept. Price 3 Annas (2) Manures and Manuring (City Sewage). By J W Leather, Ph. D, F I C, F O S Price 2 Annas.
Chart for Officers of the Indian Medical Service. By E C Dozey, 135, Dharamtala Street, Calcutta Price Rs 2

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Original Article

EXTRACTION OF CATARACT IN THE GOVERNMENT OPHTHALMIC HOSPITAL, MADRAS

BY T H POPE,

LIEUT COL, I M S,

Superintendent

It is my intention in this paper to publish my farther and latest experiences in regard to extraction of cataract as practised by me in hospital. In the special Ophthalmic Number, June 1901, of the *Indian Medical Gazette*, my method of operation, preparation of the eye, and the after-treatment with many details, are fully recorded, and the reader is referred to that paper for any particulars on which he may wish to be enlightened. Since my return from furlough to Europe, in February last year, I have continued the same procedure of operation almost entirely, but in removing the lens, especially from the left eye, I find that the pressure on the upper lip of the incision is better effected by the tip of the index-finger than by any metallic or other instrument. The pressure can be so carefully graduated by the finger tip, which offers the best and most suitable resistance and is easily under control.

In May 1901, about six weeks before I left Madras on leave, I made up my mind to avoid all bandaging of the eye after operation, and simply protect the eye by means of a double eyeshade, tied firmly round the head. The shade used in hospital is simply a rectangular piece of stiff paper, stitched over with indigo-stained muslin, and has two pieces of tape attached to the upper corners. It extends, when applied, from one temple to the other, and hangs about 1½ inches below the eyes. The patient by raising the head is easily able to see from underneath the shade. I had been led to adopt this method from my experience of the great advantages gained, in treating wounds of the cornea and conjunctiva by what I may term the "open treatment." It is, in my opinion, quite a necessity to avoid bandaging in all cases of uncomplicated inflammations and injuries of the cornea and conjunctiva, and to treat such lesions simply by thorough cleansing with antiseptic washes followed by the application of an effective shade. Photophobia is at once relieved, and there is no retention of purulent or septic matter of any kind. In this part of India, I am convinced that bandages, with dressings however light, when applied to the eyes for even 24 hours, increase the chances of inflammatory reaction in the cut tissues after cataract extraction. Moreover so many patients, poor and

ignorant, attempt to raise the bandages and dressings to see what is the chance of their getting vision after operation. I freely admit, that, in most cases, the application of bandages and dressings has no harmful effect whatever, but since the abolition of the same, I think, I have made a good step in after-treatment, and apart from everything else the feeling of comfort and freedom in having to wear only a shade after operation seems to me an advantage. It is a great pleasure also to see how comparatively free from harm the procedure is in hospital practice. The operation having been completed, a few drops of a solution of glycerine in water (5%) are instilled, or the section is dusted over with finely powdered iodoform, the shade is applied, and the patient is led to the ward.

Herewith I submit the history of the first twelve cases only, copied out of the hospital register, and there will be found many interesting points by a careful study of them. This method of treatment has been and is being tried, I was told by Professor Hirschberg of Berlin, by some surgeons in Germany and France, but with what results I have not been able to ascertain. It only convinces me of what I am daily reassured, that there is nothing new to be found in ophthalmic surgery, and the more one studies, and one's experience grows, the less that professional monster "ego" is thought of.

I—Disease—Cataract

Name—Papiah	Occupation—Cooly
Age—50	Date of admission—9th May 1901
Caste—Hindu	
DATE	PARTICULARS OF CASE AND PRESCRIPTIONS
	<i>History</i> —Left eye operated on four months ago. Vision failed in right eye six months ago.
	<i>General condition</i> —Fairly well nourished, healthy.
	<i>Pupil and lens</i> —R. E pupils dilated by A ₁ , lens opaque.
	V R E = p l (perception of light)
11th May 1901	—Operation, right, primary capsular laceration, conjunctival flap and extraction of lens. Cataract C N.
	A ₁ and shade
13th May 1901	—Eye quiet, pupil clear, cornea bright, section united, vision good.
	A ₁ and shade
16th May 1901	—Has recovered.
	V R E + 10 D = $\frac{15 M}{M B L}$ — +16 D = No X Jaeger.
	Discharged

II—Disease—Cataract

Name—Veeran	Occupation—Ryot.
Age—45	Date of admission—29th April 1901
Caste—Hindu	
DATE	PARTICULARS OF CASE AND PRESCRIPTIONS
	<i>History</i> —Sight failed in left eye one year ago and in right eye a couple of months later.
	<i>General condition</i> —Poorly nourished, weakly old man.
	<i>Pupil and lens</i> —Pupils semi dilated under A ₁ , lenses opaque. V = pl.
	A ₁ and glycerine syringing R E

13th May 1901 — Eye quiet, pupil clear, section united
A₄ and bandage
16th May 1901 — Has made a good recovery
Readmitted for operation on L E
A₄ and glycerine syringing L E
18th May 1901 — Operation, left primary capsular laceration,
conjunctival flap and extraction of lens
Cataract C N Shade
20th May 1901 — Eye quiet, section united, a little soft
matter in pupil
Cocaine and A₄ Shade
24th May 1901 — Has recovered
$$V R E + 10 D = \frac{1.5 M}{M B E} + 16 D = \text{No X Jaeger}$$

$$L E + 10 D = \frac{1.5 M}{M B E} + 16 D = \text{No X Jaeger}$$

Discharged

IX—Disease—Cataract

Name—Elli
Age—50
Caste—Hindu
Occupation—None.
Date of admission—20th
May 1901

DATE PARTICULARS OF CASE AND PRESCRIPTIONS

History—Sight failed in right eye three
years ago and in left eye six
months ago

General condition—Poorly nourished, weakly
old woman

Pupil and lens—Pupils dilated by A₄, lenses
opaque

V=pl

A₄ and glycerine syringing R E

22nd May 1901 — Operation, right, primary capsular laceration,
conjunctival flap and extraction of
lens Cataract hard

24th May 1901 — Eye quiet, pupil clear, section united
A₄ shade

28th May 1901 — Has recovered
$$V R E + 10 D = \frac{1.5 M}{M B E} + 16 D = \text{No X Jaeger}$$

Discharged

X—Disease—Cataract

Name—Ettiah Pillai
Age—62
Caste—Hindu
Occupation—Ryot.
Date of admission—21st
May 1901

DATE PARTICULARS OF CASE AND PRESCRIPTIONS

History—Vision failed in left eye three
years ago and is very dull in
right eye

General condition—Well nourished, healthy
Pupil and lens L E—Pupil dilated by A₄,
lens opaque

V L E = pl

22nd May 1901 — Operation, left, primary capsular laceration,
conjunctival flap and extraction of lens
Cataract Morgagnian

24th May 1901 — Eye quiet, pupil clear, section united
Cocaine and bandage

27th May 1901 — Has made a good recovery
$$V L E + 10 D = \frac{2 M}{M B E} + 16 D = \text{No VIII Jaeger}$$

Discharged

XI—Disease—Cataract

Name—Mahomed Oosman
Sahib
Age—48
Caste—Muhamadan
Occupation—Trader
Date of admission—31st
May 1901

DATE PARTICULARS OF CASE AND PRESCRIPTIONS

History—Vision failed in right eye six
months ago and is very defective in left eye

General condition—Well nourished, healthy
Pupil and lens R E—Pupil dilated by A₄,
lens opaque

V R E = pl

A₄ and glycerine syringing R E

1st June 1901 — Operation, right, primary capsular laceration,
conjunctival flap and extraction of
lens Cataract Morgagnian

3rd June 1901 — Eye quiet, pupil clear, section united, vision
good
Cocaine. Shade

4th June 1901 — Has made a good recovery

$$V R E + 10 D = \frac{1.75 M}{M B E} + 16 D = \text{No VIII Jaeger}$$

Discharged

XII—Disease—Cataract

Name—Subraya Asai
Age—63
Caste—Hindu
Occupation—Carpenter
Date of admission—31st
May 1901

DATE PARTICULARS OF CASE AND PRESCRIPTIONS.

History—Left eye lost Vision failed in right
eye six months ago

General condition—A deaf old man in fair
condition

Pupil and lens R E—Pupil semi-dilated under
A₄, lens opaque, has an outward squint.

V R E = pl A₄ and glycerine syringing R E

1st June 1901 — Operation, right—Primary capsular laceration,
conjunctival flap and extraction of lens
Cataract C N

3rd June 1901 — A little soft matter in pupil, eye quiet
Section united
A₄ open shade

8th June 1901 — The soft matter is getting absorbed and
vision is improving
Continued treatment

10th June 1901 — Has recovered
$$V R E + 10 D = \frac{1.5 M}{M B E} + 16 D = \text{No X Jaeger}$$

Discharged

Remarks—In reference to the above cases I
would state the following—

(1) There may still be some surgeons who
may not quite understand the term “primary
capsular laceration” This is the first step in the
operation, and is known as Drake-Brockman’s
procedure It was initiated and practised by
him for many years in this hospital Instead
of rupturing the capsule by a cystotome, as is
done in the usual combined operation with
iridectomy, Drake-Brockman used a Bowman’s
stopneedle and began his operation by tearing
the capsule of the lens A full account is given
in the special ophthalmic number of this Gazette,
June 1901, page 237

(2) The recording of vision in each case for
distance is by applying a double convex lens of
10 dioptres, and asking the patient to count
M B E, moderate bull’s eyes (Professor Long-
more’s dots for testing recruits), and the distance
is measured This test is made in most cases
about a week or less after the operation, and it
is easily understood that each day afterwards
the vision improves

(3) The solution of atropine sulphate used,
denoted by A₄, is 4 grains of the salt to one
ounce of distilled water, and the solution of
cocaine hydrochloride is always four per cent

(4) The history of only twelve cases is pub-
lished to save space, and although many more
were treated in the same way in May and June
1901, my absence on furlough till February 1902
caused a break in my work Since my return,
however, until now, it is the routine treatment
in the hospital

(5) I herewith append a table showing the results of cases up to June this year —

Class of Patients	Number of operations	Failures	REMARKS
Europeans and Eurasians	28	2	One from Iritis, one Retinal failure
Natives { (a) In patients (b) Out-patients	1,165 42	78 2	
TOTAL	1,235	82	6.6 per cent
Number of cases of Prolapse of Iris	52 in	above or	4.3 per cent

In reference to the above table I must add the following remarks —

- (a) The history of every case of failure is entered by my Assistant-Surgeon, and this is rigorously attended to by me, so that no failed case escapes.
- (b) The "out-patient" native cases, numbering 42 above, were cases of caste natives, who on no account would stay in the hospital. These were operated on, the shade applied, and they were taken home to the town either walking or in bullock carts, &c. They attended the out-patient room daily after operation and were seen either by me or my Assistant-Surgeon, or by both of us, until the final result.
- (c) Each case of "prolapse of iris" is noted by me in my own writing in the operation record book, and thus every case is recorded without fail. These cases are treated secondarily.
- (d) All the above numbers have been verified by my Assistant-Surgeon from the hospital records.

SOME CASES OF LABOUR IN HEART DISEASE

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THE subject of labour in heart disease is one but little noticed in the text-books, yet it is one of great interest and of no little importance, both from the point of view of prognosis and that of treatment. These cases include, I think, all I have treated, with the exception of one of mitral regurgitation, of which I do not appear to have taken notes.

CASE I

*Labour in the first stage of Mitral Stenosis
Post-partum Hæmorrhage facial paralysis
slow involution*

A Bengali Christian, a 4-para, whose last pregnancy had occurred three years earlier, was taken

with slight labour pains at 6 A.M., on May 5th, 1901. The pains became stronger at 2 P.M., and the os was dilated three fingers at that time. By 8 P.M., there had been little progress, and she was accordingly given the following prescription —

R Chloral Hydrat m ℥xij
Pot Brom gr ℥xij
Spirit Chloroform m xx
Aquam ad 3j

In half an hour the os was fully dilated, and at 9 P.M., she was delivered of a girl weighing 8 lbs 4 oz. The placenta was expelled at 9.45, and this was followed by free bleeding, checked by kneading the uterus and by giving a hypodermic injection of ergotin m x and Extract Ergot Liq by mouth. Twenty-four hours after delivery right facial paralysis set in, accompanied apparently by loss of taste on the right side of the tongue. There was no discharge from the ear. The pulse was small and regular. The heart's apex lay in the 4th left space three and three-quarter inches from the mid-line and a presystolic thrill was to be felt over it. The deep dulness extended to the left of the mid-line as follows — In the second space 2 inches, in the third 2½, and in the fourth 3½ inches, and on the right side it extended 1 inch from the mid-line. On auscultation at the apex there were heard a presystolic murmur, a loud first sound and a second sound. There were no "symptoms," and no evidence of back-working. Two days later the presystolic apical murmur had disappeared, the first sound at the apex was still loud, short and sharp, and the second sound was present. The pulmonic second sound was reduplicated but not unduly loud. On the 14th May the cardiac signs were unchanged, and the facial paralysis was less, but there was a watery mucous discharge from the uterus in considerable quantity, the diaper though saturated being quite sweet, and the fundus reached half-way between the umbilicus and the top of the symphysis pubis.

On May 17th, the 13th day after delivery, the uterus was still large, discharge persisted and appeared to have no smell, that is the diapers were quite sweet, but on vaginal examination the os was widely open, admitting the finger, and the uterine cavity was filled with offensive pus, its walls however being quite smooth. It was gently curetted, but only a small quantity of flocculent debris removed. From this time involution proceeded slowly, and she was not discharged till June 6th, the 33rd day after delivery. She was treated throughout the puerperal period with a mixture containing ergot, quinine and digitalis, the last not being given for the cardiac condition, but as part of the routine treatment of all puerperal cases.

Comment — This is a curious and anomalous case. The course of mitral stenosis is divided clinically by Sir William Broadbent into three

stages, in the first there are audible at the apex a presystolic murmur, a short, sharp first sound and a second sound, in the second stage the second sound and outside the apex disappears, and in the third stage the presystolic murmur also disappears, there only being heard at the apex a first sound

In the case under question the signs at first were those of the first stage of mitral stenosis. Later the presystolic murmur disappeared and only first and second sounds were heard at the apex, though the first sound retained its stenotic character. The disease appeared to have receded to a stage antecedent to the recognised first stage. Sir William Broadbent, to whom I referred the case, suggested that it was similar to a transient presystolic murmur he has noted in typhoid fever, and which he has attributed to dilatation of the ventricle without dilatation of the mitral orifice, the valves being stretched so as to encroach on the passage. This I fancy would indicate some thickening of the valves with lessening of extensibility for the usual effect of dilatation of the ventricle including the mitral sphincter is to produce incompetence, the bases of the valves stretching equally with the sphincter, so that the flaps do not fall together properly, regurgitation being produced and not obstruction.

Taking into consideration the state of intelligence of the woman I do not think much reliance can be placed on the statement as to the loss of taste on the right side of the tongue. This leaves the seat of the lesion causing the facial paralysis unsettled.

Involution was as usual slow. The absence of smell on the diaper while the uterus contained offensive pus is not unusual. The presence of a fairly copious and dirty discharge, probably with fever, are the signs which should make one suspect the condition.

CASE 2

Labour in the first stage of Mitral Stenosis Slow Involution Secondary Post-partum Hæmorrhage

A European aged 21, a 3-para, was delivered on the 14th November of a live female child weighing 7lbs 12oz. The labour was a normal one, the first stage lasting five and a half hours, the second 20 minutes, and the third 5 minutes, and there was no unusual bleeding. In the evening, about 8 hours after delivery, the discharge became free and she was given Extract Ergot Liq 5j 4tis horis. Next morning the discharge having much diminished, the medicine was changed to Extract Ergot Liq mxx, with quinine and digitalis three times a day.

On the 20th November, the 7th day, the discharge, which had continued to be blood since delivery, became brighter, after-pains had been

persistent, and she complained of pain in the left knee. On being questioned she stated that she had, when a child, had rheumatic fever and heart disease. Examination disclosed a presystolic thrill and an impulse in the fourth left space three inches from the mid-line. On percussion the deep dulness extended three inches to the left of the mid-line in the fourth space, and two inches to the left in the third space, while to the right it reached two inches from that line. On auscultation at the apex there were audible a rough presystolic murmur a first and a second sound, while at the base the pulmonary second sound was loud. The veins in the neck were distended and slightly pulsatile and the liver reached the umbilicus. She was ordered Sodæ Sahcylat grs x ter die in addition to the ergot mixture.

On November 22nd, the 8th day, the cardiac condition was unchanged, the discharge continued bright red, and the uterine fundus reached two inches above the pubes. The ergot mixture was given every four hours, this checked the discharge, which however re-appeared for a short time on November 26th. She was discharged next day, the 14th day, with the uterus ante-flexed, but still a little large, and the cardiac condition much the same.

Comment—Judging by auscultatory signs this was a case of mitral stenosis of the first stage. Of this stage Sir William Broadbent remarks "It is the persistence of the second sound at the apex which is the chief distinctive feature of this stage. Under these conditions I have never known serious symptoms arise from the condition of the heart." Yet in this case there were serious symptoms. There was evidence of dilatation of both auricles, and of the right ventricle with tricuspid regurgitation. Wherein then lies the fallacy? It is I think due to the change in the heart consequent on pregnancy and is produced as follows.

The second sound at the apex is the aortic second sound conducted thence along the left ventricle. Ordinarily in the second stage of mitral stenosis, owing to the hypertrophy of the right ventricle, this overlaps the left ventricle and shuts it out from the chest wall so that the aortic second sound is not conducted to the ear. I take it that in this instance the hypertrophy of the left ventricle consequent on pregnancy has been such that the ventricle has increased in size sufficiently to push itself out from behind the right ventricle and reach the chest wall. In this way a condition of circulation, which should be, and probably before pregnancy occurred was, associated with the second stage of mitral stenosis, comes to be found in conjunction with the auscultatory signs of the first stage of that disease.

Involution was as usual slow, and the blood discharge continued longer than usual.

CASE 3

*Delivery in the second stage of Mitral Stenosis
Cerebral Embolism Death*

A European woman applied for registration as a maternity case at St Mary's Hospital, Paddington, with the following history. Four years previously she had been delivered by the Obstetric Officer of the hospital, who had made the following note in the case book — "Severe double mitral disease, mother and child did well." There was a somewhat doubtful history of rheumatism. During labour the maternity clerk on arrival at the house, having noticed her flushed cheeks and red lips examined her chest and finding evidence of mitral stenosis, unfortunately left the woman and came back to the hospital for advice, and the child was born in his absence. There was, however, but little more than normal bleeding after the birth of the child, although this took place without skilled assistance. He returned in time to expel the placenta 40 minutes after the birth of the child. After delivery when I saw her there was nothing abnormal beyond mitral stenosis of the second stage and some bronchitis, for which she was given squills with ergot. The next day, May 5th, she looked well and felt comfortable except for after-pains.

Early next morning, however, I was hurriedly sent for, the messenger saying that the woman was dying. On arrival I found her with the corneæ turned up under the upper lids. She watched my movements about the room, but could not be induced to answer any questions or to give any sign of understanding anything which was said to her. She did not put out her tongue when told to do so and held the lower jaw rigid so that the mouth could not be opened. There was no facial paralysis, the limbs were all flaccid, one side not more so than the other, and on pinching any limb she moved it away. Her pulse was regular, the wave not very easily compressible. There was no enlargement of the heart on auscultation there were heard at the apex a long presystolic murmur, a short, sharp first sound, but no second sound, the pulmonic second was somewhat accentuated, the sounds over the other areas were normal. The respirations were 24, there was some cough but no expectoration, the chest moved freely on both sides in respiration, there was rhonchal fremitus, no dulness and free entry of air with much coarse crepitation, there was no venous enlargement nor pulsation, no enlargement of the liver nor cedema of the feet, the temperature was 98.6°. The condition was very puzzling as the signs of organic lesion were far from clear. Questioning elicited the fact that a few weeks before she had complained to the nurse of pain in the middle and ring fingers of the left hand, with weakness on the left side and in-

ability to speak. Her husband, however, knew nothing of this, and said that if it had occurred it must have been transitory.

In the evening of the same date there was evident facial paralysis of the right side, the furrows of the forehead on that side being obliterated. The temperature was 100° and the pulse was slightly irregular in force.

On May 17th the mental condition was unchanged. The paresis of the right side was much more marked. The nurse unwittingly drew attention to this by saying that she seemed in pain all down the left side, because while the right side was always still, she kept moving the left limbs continually. This, as a matter of fact, was so, though she still moved all the limbs to the stimulus of a pinch. The bronchitis had increased to such an extent that it was impossible to hear the heart sounds.

She was admitted into hospital and treated with digitalis, strychnine and large doses of expectorants. She was, however, unable to expectorate, and became cyanotic, sinking gradually and dying next day without convulsions but quite blue. She never showed consciousness of her surroundings. No *post-mortem* examination was permitted.

Comment — In this instance a condition originally that of double mitral disease had passed into one of pure stenosis of the second stage. The right ventricle had not failed up to the time of the embolism, but the result of the hemiplegic weakening of thoracic muscles and diaphragm and the consequent interference with the respiratory aid to the circulation was sufficient to produce great pulmonary congestion and failure of the right heart. The embolism was doubtless caused by the exertion of labour. The hemiplegia was curiously partial and at first very suggestive of hysteria.

CASE 4

Labour in Double Mitral Disease

A Bengali woman, aged 26 years was admitted into the Eden Hospital in labour on 11th July 1901. She could not say whether the child was full term or not. She was at that time in slight pain, the os was two fingers dilated, the membranes ruptured, and a blood discharge showed. The foetal sounds were not audible. The pulse was feeble, but no note was made as to the condition of the heart. She was given "Mist Stimulans," and early next morning after a few good pains a small dead child weighing only 3 lbs and with the skin peeling off was born, followed by some large hard black clots. The uterus was lax and had to be kneaded and the placenta expelled. Its uterine surface was covered by hard clot. The uterus remaining lax was douched out with Izal lotion 1 in 200, kneaded further, and an extra dose of ergot given.

At 8 A.M. I examined her and found the following condition. The pulse was irregular and uncountable, on auscultation the heart rate was 189 per minute. The heart's apex lay in the sixth space four and-a-half inches from the mid-line, on auscultation at the apex there were audible first and second sounds, the latter being reduplicated. At the base the second sound was accentuated. The external jugular vein was distended, the feet slightly cedematous, the flanks resonant, the liver reached a hand's breadth below the costal margin.

The treatment consisted in the immediate hypodermic administration of ten minims of tincture of digitalis and the subsequent administration of the same drug in five minim doses with an ounce of fever mixture by mouth every four hours.

Next morning the pulse was still irregular and easily compressible and uncountable, the heart rate was however more rapid, being 204 per minute and the apex beat although unchanged in position was more diffuse. The two sounds were audible all over the cardiac area, there were no adventitious sounds. Tincture of digitalis was given hypodermically every 4 hours instead of by the mouth. Next morning, that of the 14th, the pulse was still uncountable at the wrist, but the heart rate had fallen to 150, and the apex was more defined, the sounds there were more definite and louder, and the first sound was reduplicated. The uterus reached up to an inch below the umbilicus and the discharge was offensive. For the last condition the uterus was douched at once with Izal lotion 1 in 200, and in consideration of the improvement in the cardiac condition and the painfulness of the digitalis injections, the drug was given every eight hours by mouth and every eight hours hypodermically.

On the morning of the 15th the heart rate had fallen to 140, and was irregular, and of these beats only 100 reached the wrist per minute. The apex beat was more definite, and auscultation showed a rumbling presystolic murmur, a first sound and no second sound. The cedema of the feet was less and the pulmonic second sound was becoming louder than the aortic. The uterine fundus lay $1\frac{1}{2}$ inches below the umbilicus. The digitalis was continued as before, and a uterine douche ordered twice a day.

On July 16th the pulse and heart rates were both 120, were irregular with abortive beats, those beats in which full contraction occurred being accompanied at the apex by a loud rumbling presystolic murmur, a first sound and a second sound. The cedema of the feet had disappeared. The uterine discharge was offensive. Tinct digitalis was given every eight hours by mouth only, and the douche was continued.

Next morning the heart-rate had dropped to 100, only and the digitalis was stopped altogether.

Her condition remained much the same up to the 25th, except that her temperature rose to 103, and she passed, partly naturally, and partly by the aid of santonin, 12 round worms, and on the 20th a soft systolic murmur appeared at the apex in addition to those already noted. The temperature fell after the expulsion of the round worms, but she got up without leave and walked about and brought on a return of the cardiac incompetence.

On the 26th July the pulse was 140 and irregular, the respirations 32, there was much cedema of the feet and chest wall, the veins in the neck were enlarged and pulsating, the liver pulsated and reached from the 7th space to the level of the umbilicus in the right vertical nipple line. The apex beat lay in the 6th space $4\frac{1}{2}$ inches from the mid-line, the left auricle did not appear enlarged. On auscultation at the apex there were audible a presystolic murmur, a first, but no second sound, and at the base the pulmonic was louder than the aortic second sound and was reduplicated. There was a respiratory rhythm of the heart. The uterine fundus reached one and a half inches above the symphysis pubis, and there was a slight discharge. A strychnine and digitalis mixture was given. Next day the condition was more serious. The right auricle and ventricle were both much dilated, the dullness reaching out 3 inches to the right of the mid-line, and the ventricle beating forcibly in the epigastrium.

The apex beat was further out, being in the 6th space 4 inches from the mid-line. The cardiac sounds were unchanged except that the pulmonic second was no longer louder than the aortic. There was still no tricuspid murmur, and the lungs remained clear, but cedema appeared in the left hand. The uterus had left the abdominal wall, and the uterine discharge was less. The hypodermic administration of digitalis had to be resumed, and a calomel and jalap purge given, followed by white mixture, and eight leeches were applied over the liver.

These measures were followed by very rapid amelioration of her condition, for next morning July 29th, the pulse had fallen to 100, the heart being 120, the cedema had practically disappeared, there was no epigastric or venous pulsation, and the liver had retreated an inch. At the apex were to be heard a presystolic murmur, a first sound, a systolic murmur and a second sound, and the pulmonic second was again louder than the aortic second sound.

On August 3rd the pulse was irregular, its rate 100, while that of the heart was 120, the apex lay only 4 inches from the mid-line in the sixth space, and dullness reached only three-quarters of an inch to the right of the mid-line. The right ventricle was however beating forcibly in the epigastrium, at the apex were heard a rough presystolic murmur lasting the whole of diastole, a loud first sound and a faint second

sound, the pulmonic second was loud and reduplicated. The lungs were clear, the feet cedematous, and the liver reached to within an inch of the navel. On the 6th August she insisted on her discharge, involution was advanced and the general condition unchanged.

Comment—This is a good instance of the disappearance of all murmurs when the heart has failed from mitral valvular disease. It was not until sixteen days after delivery that the presystolic murmur appeared. The condition is judged to have been one of double mitral disease and not one of the third stage of pure mitral stenosis for the following reasons. Firstly, a systolic murmur appeared for one day, secondly, the second sound was always present at the apex, and thirdly, there was not the amount of dilatation of the left auricle that one would expect in the third stage of mitral stenosis.

The visceral congestion was marked and showed itself as usual by slow involution of the uterus.

The hypodermic administration of digitalis in these severe cases of heart disease is often a necessity. This was strikingly shown in a case of heart failure to whom for over 24 hours I had been giving large doses of tincture of digitalis by mouth. After death it was evident that a large portion of this was still lying in the stomach. Absorption from the stomach in these severe cases of heart failure is uncertain, and the only way to be certain that the drug enters the circulation is to introduce it hypodermically. The drawback is that the seats of injection are very painful, hence it is advisable to give the drug by mouth as soon as the circulation is so far improved that it is likely to be properly absorbed.

CASE 5

Labour with Aortic Regurgitation Placenta Previa Involution Slow

A European woman, aged 39, a 9-para, who had had seven children and one abortion, the last labour having been 4 years earlier, was delivered on 13th November 1901 of a live female child at 8 months. The first stage lasted 21 hours. Eleven hours after it began she passed a large clot, the pains were feeble, the temperature 100°F, the pulse 80, the foetal sounds were audible, and a marginal placenta previa found to the left. Five hours later she passed two more clots, the temperature was still 100°F, the pulse was 88, and the pains still feeble. She was given ten grains of sulphate of quinine, but it was not till three hours later that the pains became stronger.

I examined her then for the first time and found that the child was unusually small, bleeding slight, and the pains good. The os was nearly fully dilated, and the placenta presenting marginally behind the head. In view of the smallness of the child, the slowness of the

bleeding, and the strength of the pains, no interference was deemed necessary, the woman was delivered naturally two hours later, a large clot came away with the placenta, but there was no post-partum hæmorrhage. She was put to bed and given ergot and digitalis mixture, and the puerperium was uneventful.

A week later she asked me to examine her chest, as she had had for about a year pain in the centre of the chest, shortness of breath and some swelling of the feet. On examination the pulse was regular, small and easily compressible, not in any way collapsing. The apex beat lay in the fifth space three inches from the mid line, was not unduly marked, there was no epigastric pulsation and no increase of cardiac dulness to the right, but an increase to the left in the third left space. On auscultation at the apex there was to be heard a first sound of ordinary character, a systolic murmur, a second sound, and a late diastolic murmur, while at the aortic area both sounds were present and in addition a diastolic murmur. She was ordered a mixture containing Liq. Styrchni m v three times a day.

Eight days later, that is to say on the fifteenth day after delivery, the condition was rather different. There was present at the apex a presystolic murmur, a first sound, and a second sound which was reduplicated, and at the base over the aortic area a systolic murmur accompanying the first sound, there being no diastolic murmur. The uterus was retroflexed and involution had been slow, the uterus being about the size it should have been at ten days after delivery. The child was alive and well.

Comment—The actual cardiac condition in this case is one which needs some consideration for its determination—for there were audible, at one time or another, systolic and diastolic murmurs originating at both the aortic and mitral orifices, and the woman's life could not of course have been sustained had she had double mitral disease. It is evident that aortic incompetence was present, for no other condition will produce a diastolic murmur over the aortic area.

The amount of aortic regurgitation was however slight, for the pulse was not large and collapsing, nor the ventricle enlarged, nor were there any "symptoms," nor was the murmur constant.

With regard to the presence of aortic stenosis, had the smallness of the pulse been due to aortic stenosis in addition to aortic regurgitation, the hypertrophy of the ventricle would have been much greater unless "symptoms" had been present.

Mitral stenosis added to aortic regurgitation being a condition almost incompatible with the carrying on of the circulation owing to the fact that little blood enters the ventricle from the auricle during diastole, while at that time blood

is running back from the aorta into the ventricle, so that there is stasis of the circulation, it may be taken for granted that the presystolic murmur is due, as it usually is in cases of aortic regurgitation, to the fact that the impinging of the blood regurgitating from the aorta on the anterior flap of the mitral valve throws the latter into vibrations and produces a presystolic murmur.

The systolic apical murmur was doubtless due to temporary stretching of the mitral sphincter as the result of the strain of labour on the ventricle.

The usual tardy involution of heart disease was present indicative doubtless of some venous stasis. It is an interesting question as to whether this condition existing before conception was not responsible for the presence of placenta previa. As regards the management of the placenta previa, the opinion formed at the beginning of labour that under the circumstances no interference with the course of labour was required, was amply justified in the event.

CASE 6

Labour with Dilated Heart and Nephritis

A Bengali woman, aged 30, was admitted into the Eden Hospital at 2-15 A.M. on 27th August 1901 for delivery. The os on admission was nearly fully dilated, the membranes were protruding from the vulva. Her general condition was bad, there was general oedema, the pulse waim, small and irregular, and the breathing was very laboured, the temperature being 97°. She had had no fits. The child was born naturally half an hour later, and the placenta followed in an hour. There was no bleeding and no laceration, the placenta and membranes were entire. The child weighed 4 lbs 14 oz. The heart was dilated, but there were no abnormal sounds. She was given strychnine and ether hypodermically, and brandy by mouth.

At 7-30 A.M., she was very low, the pulse was imperceptible at the wrist, the breathing laboured, coarse crepitations and rhonchi were audible all over the chest, she was conscious and the urine contained half albumen. As regards treatment she was turned on her side, leeches were applied over the liver, and Tincture Digitalis m v and Liq. Strychnin m v were alternately given hypodermically every second hour. It may be said at once that the effect of turning her on her right side and keeping her in that position for several days was most satisfactory. The upper lung cleared rapidly and though the lower one remained congested, the total gain was striking.

Next morning, the 28th, her condition was so much less grave that a more thorough examination of her cardiac condition was legitimate. It was as follows—The heart's apex was situated in the fifth space four and-a-half inches from

the mid line, and was diffuse. Dulness extended from this point to an inch to the right of the mid-line, and at the apex were audible a reduplicated first and a second sound, over the rest of the heart the sounds were indistinct. The liver reached a finger's breadth below the costal margin, and there was no venous pulsation. The uterine discharge was watery and not offensive. On August the 29th, she vomited four times and her bowels were opened twelve times, some of the motions being watery and copious and some scanty. The urine was drawn off by catheter every six hours in order to measure the quantity, and only four ounces were measured in 24 hours. The pulse-rate was 140, and it was very easily compressible. On auscultation over the apex a loud first and a second sound were audible, and both sounds were distinct over the rest of the heart.

On August the 30th she was less distressed, the bowels were opened 36 times, the oedema was less, the pulse was 140 and regular and much less easily compressible. The temperature was 101.8°, the character of the lochia could not be ascertained on account of the napkin being stained with faeces. She was given a uterine douche, and no attempt was made to stop the diarrhoea, as it was looked upon as the natural method of cure of the dropsy, which was steadily decreasing.

The douche was continued twice a day for a few days and on the 1st September the hypodermic injections were discontinued, and the same quantities of strychnine and digitalis were given by the mouth. She steadily improved until, on the 13th September, her lochia had ceased and the dilatation had disappeared. The bowels were opened seven times, and the temperature rose to 101.6°. The urine contained many pus cells and hyaline and granular casts. The fever was due to right sub-mammary abscess, and the diarrhoea probably to the same cause. The abscess was opened on the 13th September and a mixture containing sub-nitrate of bismuth, sulphuric acid and opium administered four times a day, while a second containing jaborandi, scoparium, and strychnine was given every six hours. On September 18th the uterus was ante-flexed and hard, involuted and freely moveable, and there was no thickening in the pelvis. A month later she was discharged with the abscess healed, the uterus retro-verted and of normal size, and child alive and well.

Comment—Although strictly speaking not one of heart disease, this case is inserted here because clinically it was the dilatation of the heart which constituted the danger in this case, hence it is inserted in this series.

Her condition on the morning of her admission could scarcely have been graver. The postural treatment of the congested lungs merits further observation. It is simply Marshall Hall's treatment for drowning as advocated by him in

the *Lancet* two years ago (and this woman was actually being drowned in her own pulmonary mucus) and proved a valuable aid to the ordinary treatment of a dilated right ventricle.

These cases are all incomplete in that the state of the heart before delivery could not be ascertained. This is inevitable among hospital patients, but it detracts considerably from the diagnostic value of the cases.

The physical signs as noted above vary somewhat from those which are to be expected in ordinary practice, due apparently partly to the hypertrophy of the left ventricle which accompanies pregnancy and partly to the disturbance of the circulation due to the great physical exertion of labour. It is a very interesting question whether or no pregnancy, by means of its accompanying hypertrophy of the left ventricle, may not actually benefit some cases of heart disease, but whether this is so, and if it is which particular cases are likely to be benefited, the present series does little or nothing to determine. On the other hand, there can be little doubt that for a woman in whom compensatory hypertrophy has reached its limit, there is the great danger that if the physiological stimulus to further hypertrophy, afforded by the growing uterus, does not prove effectual, compensation will break down, and a very serious condition be produced. These matters can only be determined by careful observation of cases beginning before or very early in pregnancy.

It would certainly appear from the fact that none of these cases died of dilatation of the heart that pregnancy and labour do not usually have a deleterious effect on the diseased heart.

Congestion of the uterus is marked in all these cases, even when there does not appear to be any venous congestion, and this would probably make conception difficult.

Another point to be determined is whether placenta previa is commoner than usual in heart disease. Post partum hæmorrhage certainly appears to be so, still it is not inevitable, it often comes on late, and may be absent in the most serious cases. The details of treatment have been sufficiently touched upon.

AN ACCOUNT OF A RACE OF IDIOTS FOUND IN THE PUNJAB, COMMONLY KNOWN AS "SHAH DAULA'S MICE"

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THERE are in the Punjab a comparatively large number of microcephalic imbeciles or idiots of very uniform type commonly known

among the people as Shah Daula's mice. Shah Daula being the patron saint of a tomb and



Head of a microcephalic idiot—one of Shah Daula's Mice

shine in Gujrat, under the protection of whom they are supposed to be, and their name of "mice" being usually explained by a supposed resemblance then flattened skulls and prominent ears bear to these animals. Rightly or wrongly, a certain amount of mystery as to their origin, etc., has always been associated with them. They are usually to be met with wandering about the country, each under the charge of a faqir, and their pitiful appearance and condition is undoubtedly used as a means of exciting sympathy and hence extracting alms that might not be otherwise obtainable. It was largely believed that many of them were of artificial production, —a view I may say, certainly with regard to all I have examined, to be utterly without foundation. Common rumour is, however, very persistent on this point, and their charge is obviously a source of gain to those who now retain them, and from certain indirect evidence it is not impossible that the widespread tales of iron caps being applied to the heads of any children of this appearance in order to compress the skull and still further impede its growth may not in the past have been without some foundation. The proportion of these imbeciles in existence is certainly larger than that met with elsewhere or in Europe, they all bear a close resemblance, and they all seem to spring from the poorest members of the community, and to be chiefly restricted to certain districts of the Northern Punjab, but as they are not reported to be commonly sterile, and considering the paucity of women in some districts and the custom of intermarriage of the people, their number is not perhaps so very surprising. Their close relation to the shine, however, from which they take their name, requires some explanation.

There is only one of these idiots now in this Asylum (Punjab Lunatic Asylum), but another—a little child—lives in the vicinity of Shahdla,

and an infant was also seen in 1900 in Lahore. In May 1902, in company with the Officiating Inspector-General of Civil Hospitals, Punjab,* I visited the shrine from which they take their name, and was shown all that could be collected on the short notice given them, these were twelve in number, a tabulated statement of whom, with measurements and photo of the one now under my care, is here appended. The idiots (who are usually imbeciles only) are remarkably uniform in appearance and characteristics with the exception of No. 3, who had more of the peculiarities of a dwarf. They are, however, one and all much below the usual stature for children or adults of their own age; the majority are children. There is, as a rule, no bodily deformity or disease, except that four had well-marked internal strabismus,—but there was the striking peculiarity that the ears almost invariably stand out at right angles to the skull, and are proportionately large.

The head shape is, however, the distinctive feature. This is small as a whole and also in relation to the size of the body, the most marked change being in the extremely small size of the skull circumference and in the diminution of the convexity, giving the idiot a most peculiar appearance, heightened by the effect of the small, wizened faces, which, however, have often a remarkably sharp, shrewd expression, never in the least fatuous, the two sides of the head are always equal, there is never any scar or mark of injury or disease, and the hair grows thickly. The contour of the face is always regular, the teeth normal, and the palate only in a few cases slightly heightened, and never cleft. The vertebral column showed no peculiarity. Sight, touch, taste, and smell give no signs of impairment, but six out of the fifteen of them were deaf and dumb, and this, according to native reports, is the condition of the majority. Of those that can speak the intelligence is of a low order, and all indeed show varying degrees of mental impairment. Those that talk cannot carry on any lengthy conversation; their language is scanty, their replies slow in being elicited and vague, generally consisting in repetition and monosyllables, this, however, is largely due to defective training, for the one in this asylum shows considerable power of language, they are, however, one and all incapable of understanding anything but the simplest remarks, they show wonderfully little initiative, are content to sit idly and quietly on one side doing nothing, though peering about occasionally when aroused. They offer no resistance to any order, and seem actuated by few desires or impulses, they will allow any one to take away their belongings, and have little or no idea of self-protection. I never heard one speak except in reply to a question, nor saw any of the females show that

love for jewellery so characteristic of women of their class.

On the other hand, though careless of their personal appearance, and sometimes being of dirty habits—more, it seemed to me, from deficient opportunities of being otherwise and from want of training—they are not immodest or indecent, and are not wantonly filthy. They can all feed themselves, and do not display like other idiots revolting tendencies or appetites, it is rare to find them give way to passion, and only one of the number was shown to me as in any way remarkable for mutability. They never show delusions or hallucinations.

As a rule they have memory, though its scope is much restricted, and they display a certain amount of affection to children and to those who treat them well, and they are capable of being taught simple employments. In none of them is there ever any form of epilepsy. It was remarkable that though they resisted nothing else, several made most determined opposition to any measurement or examination of the head, and two absolutely refused to allow it to be done,—a peculiarity commented on by some of the onlookers as proof of the justice of the prevalent opinion that their skulls had been subjected to ill-treatment to still further increase the deformity, and that the idiots remembered this and were afraid of its repetition.

In no case, however, was the skull deformed otherwise than in its diminution as a whole, nor was there in any that peculiar distortion posteriorly described as occurring in the North American Indians, who habitually subjected the skulls of their children to pressure.

None of the imbeciles exhibited any paralysis or deformity. The hand grasped one's own with some strength, and did not lie limp and flaccid as is so often seen, and it was obvious that none were post-hemiplegic (infantile). In only one were the extremities blue and livid (the dwarf, No. 3, before referred to), and she suffered from general malnutrition, but though all were in appearance in fair general health, it is noteworthy that no one had ever seen or heard of one at an advanced age, and it seems clear that the majority die young.

I was anxious to obtain some history of each and some account of their families of origin, but the guardians of the shrine could or would tell me nothing beyond a vague statement to the effect that several had had brothers and sisters similarly affected, and that only one of the entire number had a mother who was a "Chula." The idiots themselves could tell me nothing. The guardians, however, were all agreed that the condition had existed from birth, and this was obviously correct.

In one case I had an opportunity of examining the male relations, these were healthy, and I could obtain no history of disease in the mother, of difficult labour, or of hereditary

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influence, and the condition of the child was clearly congenital

It must be remembered that those I saw formed only a small proportion of the number in all probability in existence in the Province, for though no figures are given in the recent census, there were stated to be 43 in 1885, and, as I am informed, 100 in 1891

a Mahomedan "pu," or saint, who died in 1676. The shrine is much venerated in the district and has an immense reputation throughout the Punjab, and though now poor and much fallen from its former high state, still it and its "maliks" and attendants continue to be held in great respect. It has been the custom for some two centuries apparently whenever one of these

Table of 15 microcephalic idiots, or "Shah Daula's mice," seen at the shrine of Shah Daula, Gujrat, and elsewhere

No	Sex	Circumference (normal 57 cm)	Vertical bi temporal (normal 32 cm)	
1	Male, dumb	40.5 cm	Measurement resisted	Very small height, doubtful power of hearing, palate and teeth normal, age (?) adult
2	Male, can both speak and hear	43.5 cm	24 cm	Height average, palate very high, teeth normal, fairly intelligent adult male, age (?)
3	Female, deaf and dumb	34 cm	20 cm	Height 92.5 cm, an emaciated, feeble girl, of a very dwarf like appearance, teeth normal
4	Male, dumb (deaf ?)	40.5 cm	20 cm	High palate, stature below the average, occiput slightly projecting, adult
5	Female, can both speak and hear	39 cm	21 cm	Palate high, stature average, a child, teeth normal
6	Male, deaf and dumb	47 cm	25 cm	Refused to open his mouth, stature much below the average, an adult male, very irritable
7	Male, can both speak and hear	49 cm	26.5 cm	High palate, teeth normal, stature below average, a man of 45
8	Male, can both speak and hear	49 cm	26 cm	High palate, teeth normal, appearance, etc, otherwise almost normal Marked right internal strabismus
9	Female can both speak and hear	39.5 cm	18 cm	Stature very short, a girl of 15 very intelligent face Left internal strabismus, teeth and palate normal
10	Female, can both speak and hear	Resisted all measurement	attempts at	Teeth and palate normal, short stature, age 45 (?), face normal in appearance, but expression slightly fatuous Right internal strabismus
11	Female, (hearing ?) dumb	45.5 cm	26 cm	Palate and teeth normal, stature short, a girl of 15, normal in appearance otherwise
12	Male, can both speak and hear	Absolutely refused to allow any measurement	measurement	Teeth and palate normal very short stature, a morose looking adult male, with right internal strabismus
13	Female, can both speak and hear	40 cm	20 cm	Palate rather high, teeth normal, a woman of 36 (?) considerable amount of intelligence (?), but very deficient in will power Slight left external strabismus
14	Female, dumb, deaf (absolute ?)	Measurement	not possible	Below average height, very intelligent face, palate and teeth almost normal
15	An infant of a few days old, measurement not possible, a male			
SUMMARY				
Males	8	}	Below average height	11
Females	15			
Dumb	6		Strabismus present in—	5

I have never had the opportunity of examining one of these skulls *post-mortem*

In regard to the connection of these microcephalic imbeciles with the place from which they take their name, there is in the town of Gujrat a shrine and tomb known as that of Shah Daula,

idiots (commonly called "Chuhars") are born, for the mother, directly the child was a few years old, to present it and leave it in charge of the malik of the shrine to which henceforth it was supposed to appertain, and from whence it was supported. The parents being always of

the poorer classes, it is conceivable that the care of a helpless imbecile such as these generally are, was a heavy tax on them, and that this may have been formerly the reason for the custom which by its antiquity—as always happens in this country—has become one impossible now to overcome. It is, however, to be remembered that only children deformed in this particular way were received. Formerly, there is not the slightest doubt, the infants were kept at the shrine, which was practically an asylum for them where they were tended and cared for until death, but this is not so now for, whether from failing means, lax discipline or corrupt morals, it is certain and admitted by all that from originally allowing some of them to only occasionally go out with the faqirs attached to the tomb into the district together alone, the custom has spread, until at the present day it is the invariable rule for them all to be actually leased out on a monthly payment to these men, who carry them into all parts of the Punjab, begging, and, it is asserted, neglect and ill-treat them, so that now it is only possible to see at the shrine itself the few who happen to be accidentally there at the conclusion of a round. The payment made by the faqir for each child varies, I am informed, from Re 1-8 to Rs 2 a month.

The history obtainable of the origin of the shrine is, though scanty, of an interesting character. Shah Daula, in whose honour it was founded and whose tomb it contains, was a Mahomedan "Pir," born in the time of Akbar, who lived in that capacity at Gujrat from 1612 to 1676 after having previously lived at Sialkot for 22 years¹.

He had early gained a great reputation for his liberality and talents, and was undoubtedly a man of great ability and influence. Many water-courses, tanks and bridges still exist of which the construction is attributed to him. The record of his good deeds being, as was common in those times, soon adorned by tales of his capacity for working miracles, he had also a peculiar fondness for taming wild animals, deer, etc., many of which he kept at the shrine, of which some he would later on turn loose after marking them, a habit which still further tended to increase and extend his reputation. There is no doubt that this propensity of his caused his name to be constantly associated with animals, and possibly was the origin of beliefs which certainly existed that (1) he had a miraculous power over them, and (2) that he could cause a child to be transformed at birth into an animal (*ergo* a Chuha—a rat—a microcephalic idiot) if the parents offended him or failed in their promises of gifts they had vowed when asking a favour.

In any case his tomb was largely resorted to after his death—and apparently is even now—by childless women who were in the habit of vowing a large gift or the dedication of the

future child to the service of the shrine on condition of their prayers being heard, and it was currently believed—and is, I understand, still now—that any woman who neglected to fulfil this vow would be punished by giving birth, not to a healthy child, but one of these so-called "Chuhars," if not on the first occasion, then certainly on the second.

It has been suggested that the mental influence of this was occasionally responsible for their production, and, with even more probability, it was hinted that the guardians of the shrine would not hesitate to make use of the male microcephalic resident there to ensure that some of the childless women who spent the night at the shrine in supplication should reproduce one and so maintain the reputation of the tomb for its power in this particular.

On the other hand, the custom Shah Daula certainly had in his lifetime (he having been undoubtedly a generous, careless man) of receiving any stray animal or wandering child or helpless creature, and of giving it food and shelter for an indefinite period, may have been the origin of the dedication of helpless children to his shrine, and particularly of those peculiarly deformed creatures who in the opinion of the common people so closely resembled animals, and hence had a double claim upon the generosity of himself and his descendants. The fact is in any case well known that every microcephalic imbecile of this character above the age of infancy is without exception dedicated to this tomb and from birth is known as a Shah Daula's Chuha, though, as before stated, almost all are to be found each in company of a faqir wandering about the country. There is a current belief that it is unwise to refuse alms to one of these men when lending a Chuha, as otherwise the offender's next child may be born in a similar condition, and the fact—well attested—of their paying for the privilege of procuring one is a proof that their attendance is profitable. So much so and so well known is this, that there was, and indeed still is, a belief throughout the Punjab that such idiots are sometimes manufactured artificially by compressing a child's skull with an iron cap worn for a long period. I am not aware of there being any actual proof of such a practice, and certainly an examination of their heads negatives any such supposition, for the skulls are diminished as a whole, and never misshapen or distorted as would in such cases happen, but there is equally little doubt that these men to whom they are entrusted ill-treat and neglect them, and for this reason, if not for the obvious objection to allowing the females to so wander about unprotected, it is evident that the law which lays down in the Punjab that such idiots when found should be transferred to an asylum, should be rigidly enforced, and not neglected as at present. There is not the same objection to

then retention in the shrine itself where, being well known, and its inmates always open to inspection, their condition is comparatively safe, though, on the other hand, the revenues of the tomb have from various causes now fallen so much that the plea of the headmen (themselves direct descendants of the disciple and reputed son of Shah Daula) that they are unable to maintain them is probably true. Some action should certainly be taken to alleviate the condition of these poor creatures whose deformity renders them quite unable to protect themselves, and who are so singularly devoid of all the more revolting habits common to many idiots, for no destructive and immoral acts are ever attributed to them, and the imbeciles are so well known that such a tendency would be soon made public. All the evidence obtainable indeed goes to show that they are a class of harmless imbeciles whose peculiar cranial conformation is concomitant with a general mental enfeeblement, frequently *plus* an inability to speak or hear, with a great absence of will power,—the same having existed from birth unattended with motor paralysis or epilepsy,—and without history or evidence of injury or disease to which their condition could be attributed.

Addendum—Since writing the above, another case has come under my observation in the asylum. It is that of a male, age apparently about 30, height 4 feet 7 inches, circumference of head at widest part 16 inches, he was of the usual type, could speak and hear, walk and feed himself, and was without deformity or any paralysis, but of a very low grade of intelligence, his language most rudimentary, he died a few days after admission of double pneumonia. At the *post-mortem* the skull was absolutely normal in appearance, but contracted in every direction, the brain appeared normal to the naked eye, but it has been reserved for microscopical examination.

FURTHER NOTES ON EXPERIMENTS ON THE PATHOLOGY AND TREATMENT OF MALIGNANT DISEASE

By E. R. ROST,

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SINCE the paper on this subject, published in the *Indian Medical Gazette* for April, 1903, was written, I have continued experiments and observations, and although these are far from being finished, it appears time to report progress.

Firstly, concerning chemical-pathological data, in order to estimate the amount of residual chlorine in different parts of the body various tissues were removed *post-mortem* from two cases, one that had died from a cancer of the

liver, and another from a cancer of the small intestines.

GRAMMES WEIGHT OF CHLORINE IN TEN
GRAMMES OF TISSUE

	Cancer of Liver	Cancer of Intestine
Intestine	—	01
Liver	01	03
Kidney	01	06
Testicle	—	03
Heart	03	03
Tongue	—	03
Lung	06	06
Santorius	02	05
Pancreas	—	05
Brain	—	05
Spleen	03	01
Stomach	03	01

the residual chlorine was found to be very much less than normal.

Secondly, the effect of chlorine water, dilute hydrochloric acid and sodium chloride on cultures of saccharomycetes obtained from malignant growths was observed. It was found that dilute hydrochloric acid 1% or chlorine water were most active in preventing growth of saccharomycetes, whereas sodium chloride 10% sometimes did not affect the growth of saccharomycetes for over 48 hours. It was then suggested to me by a friend that chlorine in the body might be combined with albumen, and that as such would probably prevent the growth of saccharomycetes in the body.

I found that one can induce egg-albumen to take up an appreciable amount of chlorine by diluting egg-albumen with distilled water and adding freshly-made chlorine water drop by drop, agitating the egg-albumen all the time. Further that after drying there was an appreciable increase of weight over the previously dried egg-albumen, showing that the gain in weight was a combination of chlorine with albumen, and that further this could be analysed in the ordinary way after adding sodium hydate.

Some of this chlorinated egg-albumen was given to a patient with an epithelioma of the scalp daily for about a fortnight without any benefit, and the difficulty of producing the food substance in large enough quantities led me to abandon this line of investigation.

Thirdly, the effect of X-rays on tumour jams and cultures of saccharomycetes was carried out. Glass and indiarubber being opaque to the rays, very thin protective tissue capsules were used, the jams and cultures inserted, and hung up four inches from a Crooke's tube and exposed for ten minutes a day. Immediately after exposure the contents of the capsules were re-inoculated into glucose agar tubes, and it was found that after two applications of ten minutes that no growth was obtained. However, clinically, the effect of X-rays applied vigorously to several cases of epithelioma and one case of rodent ulcer was entirely unsuccessful.

Fourthly, repetition of the experiments on cats of the influence of a diabetic diet and salt in preventing the growth of saccharomycetes in the body confirmed what has already been reported in this respect

Of six cats injected with the same cancer jam, three were fed on a carbohydrate diet, and all these died after losing rapidly in weight, as in the former cases nodules were found in their livers, while three fed on a diabetic diet and salt have not developed any symptoms, and the former cases fed on a diabetic diet and salt are still alive and well

Fifthly, clinically, and it would appear mainly in this respect that the validity of this theory is to be found, no actual case has been cured, but some cases have improved very much under the treatment, so much so as to make me believe that if it is pushed long enough complete cure is likely. The action of this method of treatment must be necessarily slow, and therefore the determination of its use as a treatment will take a long time, moreover all the cases treated up to date with the exception of the first have been cases too far advanced for operation, it is difficult to induce patients to stay in hospital merely to be treated with diet and salt for a length of time

But if this triple causation of cancer is found to be correct, its main value will be in "prevention" and not "cure" of this disease and further in the prevention of occurrences

I have some cases that have been operated on for cancer, now paying attention to diet and taking one ounce of salt a day, and it will be interesting to watch the after-history of these cases

The case reported in the *Indian Medical Gazette* as having been cured of cancer of the penis came back after six months with a recurrence of growth in penis and enlarged inguinal glands. He had not been paying attention to his diet and neglected himself in the jungle

Under treatment of strict diabetic diet, and two ounces of salt daily, and rubbing salt ointment into the body, and the local application of dilute hydrochloric acid 2 per cent, salt and salt ointment, the patient has very much improved, the growth is smaller and softer and looks more like granulation tissue, the inguinal glands are not to be felt, he has gone up in weight, and he has lost his pain

The case of epithelioma of the scalp mentioned in my former report was under the treatment for about four months without any actual benefit, though I think that the disease was stayed in its progress, as the secondary glands in the neck did not further enlarge, and he did not lose in weight. The man became tired of the treatment and went to his country

The case of epithelioma of the lip was progressing well, but absconded

I have now under treatment a case of malignant growth of the floor of the mouth, with a

secondary growth in the neck and involvement of the larynx. On admission he was in great pain, could not protrude his tongue and could hardly speak. He expectorated blood-stained pus, mucous and milky substance from his throat which smelt very badly, his throat could not be examined on account of the involvement of the floor of his mouth

After one month's treatment, the expectoration and bad smell ceased, and he could protrude his tongue slightly and speak fluently, he lost his pain and took his diet well and begged to be allowed to go back to his work

One other case of a large growth in the neck was under treatment for two months, the growth sloughed away towards the centre and a large cavity was formed, the surrounding growth did not appear to decrease in size, in fact if anything it increased in size, the patient became tired of the treatment and left the hospital. Three other cases are now under treatment, but have not been long enough in hospital, for any report to be given

In several of the cases treated by this method there was a daily rise of temperature, which gradually subsided as the treatment progressed. In some cases oedema around the growth takes place, which subsides as the treatment is continued

A Mirror of Hospital Practice.

FOREIGN BODY IN THE STOMACH—GASTROTOMY RECOVERY

By J. T. CALVERT, M.B., (LOND.), D.P.H. (CAMB.),

MAJOR, I.M.S.,

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D. D., Hindu male, aged 54 years, a leper, and a mendicant, was admitted into the Cuttack General Hospital, on the morning of the 13th April, 1903, with a history of having, 24 hours previously, swallowed a stick of wood with which he was cleaning his teeth. On admission he stated that he had vomited some milk, which he had taken early in the morning. Further he complained of pain in the right half of the epigastrium. There were no other symptoms. A pair of oesophageal forceps, passed as deeply as possible, failed to detect the foreign body. The tube of a stomach pump—used in lieu of an oesophageal bougie—passed freely into the stomach. Nothing could be made out by palpation of the abdomen.

Operation—Under chloroform, an incision three inches long was made parallel to the left costal cartilage, and about one inch from the margin. On opening the abdomen, the stomach was found to be empty, save for the foreign body, which could now be felt extending from the oesophageal opening down beyond the

umbilicus, and lying to the left of the vertebral column. Two sutures being passed through the serous and muscular walls of the cardiac end of the stomach, the latter was drawn up into the parietal wound, and opened between the suture by a vertical incision with a sharp pointed bistoury. Attempts at extraction of the stick by means of forceps proving futile, the index-finger was passed round its lower end, and the stick gradually bent on itself until the lower end layed out extremity presented through the wound, when it was seized with forceps and withdrawn. Silk not being available, the mucous membrane was brought together by a continuous catgut suture, whilst the outer part of the gastric wound was united by several Lembert's sutures. The abdominal wound was closed with sutures of silkworm gut and dressed antiseptically.

The stick removed was a green twig of the *rum* tree—*Azadirachta Indica*—and measured $13\frac{1}{2}$ " long by $\frac{1}{2}$ " in circumference. The lower end was layed out as a result of its use as a tooth-brush.

The subsequent history of the case was one of uneventful recovery. The incision healed by first intention throughout. The stitches were removed on the 12th day, and solid food was allowed on the 14th day. He was kept under observation nine days longer, to prevent him gorging himself with rice after his restricted diet, and was finally discharged cured on the 23rd day after operation.

After the operation the patient proved troublesome. The shade temperature was 105° , with hot dry winds, and consequently he had a great thirst, notwithstanding this he absolutely refused to have an enema administered either then or subsequently. The result of this was, that from the first all drink and food had to be given by the mouth, and owing to the great heat the former had to be administered in liberal quantities.

Remarks—The following remarks regarding this patient and his proceedings may prove not uninteresting. As previously noted he was a leper, and had been a sufferer from that disease for the past 12 years. No family history of leprosy could be obtained, neither had he to his knowledge consorted with lepers. He used to eat fish in his youth, but had refrained from doing so for many years. Leprosy, in his opinion, was due to internal cold, and the way to keep the disease in check was to thoroughly clean the upper alimentary tract by the following procedure, which he had daily performed for the past ten years. He first cleaned his teeth, tongue, palate, and pharynx with a *rum* stick, then he swallowed a lotful of cold water, and subsequently he pushed his *rum* stick up and down the oesophagus, with the result that the water speedily returned, and the cleansing operation was finished. Unfortunately for him during these years the disease had been advanc-

ing, and owing to the loss practically of nearly all his phalanges his hands had lost their prehensile power. On the occasion when the accident happened, he had pushed the thick end of his twig as far down as possible, when accidentally he drew a deep breath, this gave his oesophagus a chance of which it immediately availed itself, and the stick began to rapidly disappear. Handicapped as he was with his hands which he could only use as paws, he never had a chance with the thin end of twig, and the whole disappeared into his stomach. Not unlike others, the man is thoroughly convinced of the correctness of his theory regarding leprosy, and as he has the courage of his convictions, one can only hope that he will in future use a small branch instead of a twig, or seek outside assistance during this alimentary cleansing. My thanks are due to Assistant-Surgeon Ananda L. Bose, teacher of surgery, for his help during the operation and the preparation of these notes.

A CASE OF TETANUS, TREATED WITH TETANUS ANTITOXINE RECOVERY

By E. F. GORDON TUCKER,

CAPTAIN, I.M.S.,

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THE patient was a male, aged 25, well developed and well nourished. The illness began six days before admission into the J. J. Hospital, with severe headache, and attacks of pain and rigidity of the muscles of the neck and jaw. On the following day the rigidity increased in the muscles at the back of the neck, and appeared in the anterior abdominal muscles. He was then compelled to take to his bed.

On admission the expression was anxious. He preferred to remain in a sitting posture, apparently to relieve the rigidity of the anterior abdominal muscles. In the intervals between the spasms the muscles of the neck, especially the sterno-mastoids, could be felt to be hard, and the belly was board-like. The affected muscles were the seat of much pain. The palpebral fissures were widened, there was a transverse furrow at the root of the nose, and slight risus sardonicus was present. There was frequent hacking cough, after a paroxysm of coughing a little sputum was hawked up.

Exacerbations of the muscular contractions occurred regularly every five minutes. In these there was marked opisthotonus, an expression of intense anxiety and pain, and the muscles of the neck and the masseters stood out like rigid bands. The muscles of the extremities were, however, at this time, not at all affected.

There was continuous profuse perspiration. The temperature was 100, pulse 123, respirations 18 per minute.

There was no constipation. The tongue was a little furred. Appetite normal, he complained of great thirst.

He was placed deeply under chloroform, and a quarter of a grain of morphia was injected hypodermically. A mixture of chloral hydrate (grs 15) and biomide of potassium (grs xxx) was given every six hours, and two minims of croton oil were placed on the back of the tongue.

8th day of illness—In spite of the large amount of chloral given he had no sleep. This was probably due to the affectionate but unfortunate demonstrations of his relatives, who insisted on sitting on the bed and supporting him on both sides every time a paroxysm came on, and they had ultimately to be compelled to sit in the adjoining room. The paroxysms had increased in severity and frequency. Perspiration had increased, also the paroxysms of cough.

In the morning he was again put under chloroform, and a similar morphia injection given. As the bowels had not acted he was given five grains of calomel and an enema. Orders were left to use chloroform when the attacks became frequent, and this was done on two occasions.

In the evening, after much effort, I obtained a supply of tetanus antitoxine, manufactured at the British Institute of Preventive Medicine, and at once injected, under chloroform, 20 cc into the right flank, injecting into the arm at the same time one-sixth of a grain of morphia. Pulse 104, temperature 98.2.

9th day—The paroxysms remained as frequent and severe as they were on the preceding day. Chloroform was given in the morning and 10 cc of antitoxine injected, the chloral was continued (t d s), and $\frac{1}{4}$ gr of morphia was also injected. The antitoxine was repeated in the evening. At 11-0 PM he again required chloroform anaesthesia.

10th day—The bowels moved once. There seemed to be a slight diminution in the severity of the attacks, but they were as frequent as before. Temperature 99.4, pulse 104. Slight chloroform anaesthesia was induced occasionally. The lower extremities were now involved during the paroxysms, during which there was considerable plantar flexion of the left foot, the right being unaffected. During the intervals of quiescence the adductors of the left thigh could be felt to be rigid. Opisthotonus and board-like condition of the abdominal wall during the attacks as before. Antitoxine was given in two doses of 10 cc, as before, under chloroform. Morphia was also given as before with the antitoxine (gr $\frac{1}{6}$). Hawking up of thick sputum during the attacks also continued. These attacks came on about every ten minutes and lasted some thirty seconds.

11th day—The patient was put under chloroform three times during the day. The chloroform not only stopped the spasms, but also enabled the patient to sleep for about an hour after

the administration. 8 cc of antitoxine given. Urine high-coloured and concentrated, probably from the profuse sweating, otherwise normal. Bowels constipated. Temperature normal.

12th day—The chief complaint was of intense pain in the abdominal muscles. The attacks as before. Bowels opened once. The adductor muscles of the left thigh contracted as before. Chloroform given in the morning, evening, and the last thing at night.

Two injections of antitoxine of 10 cc each, given under chloroform, with one injection of morphia (gr $\frac{1}{4}$) in the morning. Chloral was given as before to promote sleep.

13th day—Chloroformed in the morning and evening. Morphia (gr $\frac{1}{4}$) in the morning, and 10 cc of antitoxine in the evening.

14th day—Perspiration profuse. Bowels moved once after a turpentine enema. Chloroform given in the morning, and morphia and antitoxine (10 cc) injected. Temperature 98.2, pulse, 98, complained of much pain in the muscles in the pubic region. A profuse antitoxine rash, an erythema with multitudes of minute vesicles appeared over the abdomen, and on the flexor aspects of the limbs.

15th day—Rash general and profuse, and the seat of marked itching. The antitoxine was omitted. Bowels moved once. There were distinct signs of improvement. The muscles of the neck hardly showed any rigidity even during the paroxysms. The tetanic spasms affected the abdominal wall and the muscles of both calves, and the adductors of the left thigh. They occurred about twice in an hour. Chloroform given in the morning, and morphia injected. Chloride of calcium was given (grs 10 t d s) in the hope of reducing the intensity of the rash and the itching.

16th day—Bowels opened naturally. Rash profuse. Morphia injected in the morning without an anaesthetic. The rigidity of the abdominal muscles was distinctly less.

17th day—Patient better. He had a good sleep, and there was a return of his appetite. The spasms much less severe.

18th day—Spasms less severe and mainly concerned the abdominal muscles. 10 cc of antitoxine injected in the evening.

19th day—Complains of headache. Rash as before.

20th day—The skin was desquamating in minute branny scales. Bowels opened by calomel. Morphia injection given at night. Occasional spasms during the day.

21st day—The patient was practically convalescent. Very slight rigidity of the abdominal muscles remained, and he had no tetanic contractions. There was considerable emaciation. The rash was beginning to fade.

He continued to improve and was discharged cured on the 37th day of the illness.

Remarks

The total amount of antitoxine given was 118 cc in 11 doses. A considerable amount of morphia was given in order to relieve the muscle pains, and diminish reflex excitability.

The calcium chloride did not seem to have any effect in removing the antitoxine rash.

On seeking for the primary lesion a small incised wound was found on the sole of the left foot. It was quite superficial and showed no sign of inflammation. He did not know when he received this cut, hence it was impossible to ascertain the length of the incubation period.

Distinct signs of improvement were noted after seven days' treatment, during which he had received 108 cc of antitoxine. With regard to the value of the tetanus antitoxine in reducing the total mortality from the disease, there is great diversity of opinion. The case which has been described can hardly be considered as anything less than an acute one, and it appeared to me that the improvement set in in such a marked manner after the patient had had a fairly large amount of antitoxine injected (105 cc), that it seemed fair to put down the improvement to the antitoxine. It is well known that the prognosis in this disease may be said to entirely depend on the length of the incubation period. I have seen it stated somewhere that if the symptoms appear within the first week after a wound, that the case is hopeless whether the antitoxine is used or not, that if the incubation period is between seven and fourteen days half of the cases ought to recover under this treatment, while if the period exceed two weeks a very large majority should be saved. This is perhaps too absolute, and the prognosis must of course depend on whether the antitoxine treatment is begun as soon as symptoms commence. However, even if the antitoxine be used whatever the incubation period be, the exhibition of large doses of morphia and chloral, with the administration of chloroform frequently, cannot be neglected for one moment. It will have been noted that the incubation period in this particular case was unknown. That a large number of cases, such as we see in India, do recover under the morphia and chloral treatment may be granted from the fact that in 1902 no less than 57 cases of tetanus were treated in the Sir J. J. Hospital, Bombay, and that 38.6 per cent of the cases recovered. And during this year the antitoxine was not used.

In a general review of the usefulness or otherwise of the antitoxine, the *Lancet* (March 10th, 1900) says "It must be acknowledged that the antitoxine treatment has not fulfilled the expectations to which its first successes gave rise. When injected subcutaneously it seems to benefit those cases only which are not very acute or very severe, and even when injected under the dura mater or intra-cerebrally it does not appear to be much more efficacious."

At the same time one cannot put on one side the many brilliant results which have been reported, especially some where the intra-cerebral or subdural methods have been used on cases seemingly of the most acute kind. The intra-cerebral method, however, should not be used, as many of the patients have recovered from their acute attack of tetanus, and died shortly after from abscess of the brain. There is one such specimen in the Pathological Museum of the Giant Medical College, which was presented some time back by a most careful and able Bombay practitioner. The site of injection in the right mid-frontal convolution, however, does not show an abscess, but the brain tissue in the neighbourhood appears to have undergone a necrotic process.

I have had the opportunity of carefully watching five cases of tetanus. Of these two died. Of the two who died one was a very acute case with a short incubation period, he was given one full dose of the antitoxine and then the supply ran short, he died in a paroxysm a few days after treatment was begun. The second was a very acute case which I had charge of in Poona, a young European male in whom the illness developed after a long period of symptoms which pointed conclusively to gastric ulcer. He died suddenly in a paroxysm on the second day of the illness. I was unable to obtain any antitoxine. Of the three who recovered, the first was a fairly severe case who was treated for a long time with antitoxine. The second was a very severe instance, and was well on the road to recovery when I lost sight of him. He also was treated with the antitoxine. The third was the present case. That is to say, out of a group of five, the three in whom the antitoxine treatment was given a fair trial, recovered. I feel inclined therefore, to place great reliance on the use of this preparation, and it appears to me that it is most unfortunate, to say the least, that in a country like India where tetanus is so common, this antitoxine should be, as a rule, so hard to procure. This difficulty is especially great in up-country stations. After trying in vain at several well known chemists in Bombay I was fortunate at last in getting it from one firm of manufacturing chemists who were progressive enough to keep it on hand. My case has exhausted their stock, so I presume that if I have a similar case within one month from this time I shall have to rely on chloral and chloroform.

A CASE OF STONE IMPACTED IN THE URETER. OPERATION, RECOVERY

By W. J. WANLESS, M.D.,

Munay

Cases of impacted ureteral calculus are sufficiently rare in India to warrant the publication of the following case—

Dawloo Babaji, age 30, Maratha, with good general health, was admitted to the Pres-

byterian Mission Hospital, Mnaj, January 27th, 1902

History—Eight years ago the patient suffered from severe pain in the right costo iliac region which lasted for a month and subsided. During the past four months micturition has been frequent and difficult, and the urine scanty. Three months ago two small stones were passed. Has had frequent attacks of hæmaturia in the past four months attended with pain in the lumbar region, and radiating into the scrotum.

Present condition—Complains of constant pain in the right lumbar region radiating towards the scrotum, and at times referred to the epigastrium. There is frequent micturition, the urine scalds and is high coloured, twenty ounces voided in 24 hours, contains mucous corpuscles in abundance, small, round and large squamous epithelium, but no casts or crystals are observed.

Description—In the right costo-iliac region there is an intra-abdominal boggy swelling, the size of a large orange extending to the crest of the ilium and capable of upward displacement to the extent of about two inches. The patient says that swelling has existed for a month and varies in size from time to time. The swelling is painful on pressure, and when distended the pain becomes acute. *Diagnosis*—Hydronephrosis, with impacted stone probably in the pelvis of the kidney.

January 28th—Operation—Narcosis, chloroform 3vi. Time one hour. Assisted by Dr J R Williamson and the house staff, a vertical lumbar incision at the outer border of the erector spinæ muscle beginning an inch below the twelfth rib and extending downward four inches was made, and the kidney was exposed in the usual manner. The kidney brought up into the wound palpated and found to be considerably smaller than normal. The pelvis of the kidney was found distended and bulging upward over the anterior wall of the kidney. It was punctured with a trocar and six ounces of dark coloured urine evacuated. It was then incised posteriorly and explored with a probe and finger, but no stone detected. After further exposing the ureter and prolonged palpation a stone was detected in the ureter lying on the rim of the pelvis over which the ureter seemed to be tightly drawn, and where the stone was evidently arrested in its descent through the ureter. A shallow groove was subsequently discovered on the surface of the stone apparently produced by prolonged impingement on the rim of the pelvis. The ureter was bent upon itself not unlike a letter S, which accounted for our inability to pass a probe into it from the ureter. By deep pressure on the abdomen the stone was displaced upward toward the wound by Dr Williamson and held steadily, while I hooked the ureter upon my finger inserted into the pelvis of the kidney. I then, using my finger as a guide, made a puncture through the posterior wall of the pelvis of

the kidney, thence through the wall of the ureter which was held in its looped position tightly against the kidney pelvis by Dr Williamson making deep pressure upon the abdomen. The wound was stretched by opening the point of a long sharp-pointed scissors used to make the puncture and the stone extracted with a slender bladed stone forceps. A loose gauze packing was carried into the pelvis of the kidney and out through the lower angle of the external wound. No attempt was made to close the opening in the ureter. A second gauze drain was carried from the deep portion of the external wound out through the upper end of the incision. The remainder of the wound was closed by catgut suture, for the muscles and fascia and silkworm gut for the skin. A bichloride gauze dressing and a binder completed the operation. There was no shock, and reaction was prompt.

Subsequent—The patient passed 24 ounces of clear urine in the first 18 hours following the operation, a small quantity escaping into the dressings. Within three days the quantity of urine voided rose to 46 ounces, and two days later to 55 ounces, and thereafter continued normal in quantity. The loose gauze packing was removed from the external wound on the 29th, and that from the pelvis of the kidney on the 30th. The urine was bloody for 24 hours after removal of the deep gauze packing. The wound healed without suppuration, and by February 5th had completely healed, when the patient was discharged completely relieved of his symptoms.

The case seems to be of special interest on account of—(1) The kinking of the ureter, (2) the impingement of the stone on the renal pelvic rim, (3) the method of removal, by incision of the pelvis of the kidney and transfixion of its posterior wall in order to reach the looped-up ureter which it seemed impossible to otherwise incise.

A CASE OF CEREBRAL ABSCESS

BY SATIS CHANDER BANERJEE,

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SARODA, Hindu male, æt 32, a shop-keeper, was admitted into the Medical College Hospital on the 2nd August 1902.

He stated that about five months previous to his admission after a chill and exposure to cold, he had running from nose and severe pain at his right ear, followed shortly by purulent discharge, which continued for two months. Severe headache came on with the stoppage of the discharge. Shortly after he had fever with delirium coming on with rigor, which was cured within a fortnight, but a constant dull aching pain in the head continued. Simultaneously with headache he began to vomit two or three times a day, not necessarily after food, and he had dimness of vision in his right eye. The headache and vomiting, though not so frequent as

before, remained persistent. About a fortnight ago he noticed fine tremors of his left thumb and index-finger, which gradually increased up to the time of admission.

There was no history of syphilis or gonorrhoea. His *complaints* were, constant intense headache, worse in the morning, and purulent discharge from and pain in his right ear. The headache, which was daily increasing in intensity, started from the right temporal region and radiated upwards and backwards. There was intense pain and tenderness a little in front of his right ear near the zygomatic process and over the parietal region about an inch behind and above the right ear, the tenderness being most marked at the latter situation. There was pain and tenderness over the distribution of the fifth nerve of the right side. There were spasms of and tenderness in the right sterno-mastoid and trapezius. The right eye used to water. He could not count fingers with his right eye. On ophthalmoscopic examination, the right disc was found swollen, margins not distinct, veins distended, left eye was normal. He could not hear ticking of watch with his right ear, at a distance of an inch, but could hear turning fork on the mastoid process. Tympanic membrane was perforated, and there was pus in the middle ear. There were clonic spasms of the right thumb and index-finger, the movement in the thumb being lateral, and in the index-finger antero-posterior. Knee-jerks were exaggerated on both sides. No ankle-clonus, no peculiarity in his gait. Temperature was *normal* all along. Digestive, respiratory and circulatory systems were normal.

He was transferred to Dr Charles's Ward as a case of cerebral abscess in the temporo-sphenoidal lobe, and on the 8th August was operated on in the following manner—

The operation area having been made aseptic, the Rolandic region was marked out, and the site for trephining chosen at 1" above the upper margin of and $\frac{3}{4}$ " posterior to the right ear. A horse-shoe-shaped incision was made, periosteum separated, and a circular piece of bone taken out by a trephine $\frac{3}{4}$ " in diameter. The dura mater bulged out showing great intra-cranial tension. This being cut and reflected, softened brain substance protruded. A Paget's knife was introduced downwards and backwards for about an inch, whereupon on passing a director along the knife about 30 of pus came out, and pulsation of brain was noticed for the first time. The knife was

withdrawn, and the director shifted slightly when more pus came out. Total quantity amounted to nearly an ounce. When the brain was first incised, the whole of the left side of the patient was thrown into a state of spastic rigidity, but this gradually passed off, and when the operation was completed, the clonic spasms of the left thumb and index-finger ceased entirely. A drainage tube of moderate calibre was introduced to the bottom of the abscess cavity. When this was done, clonic spasms of left hand and forearm reappeared, but on withdrawing the tube for a short distance they disappeared again. The dura mater was carefully stitched with silk-worm gut and the scalp sutured, an opening being made for the drainage tube. Antiseptic dressings and a capeline bandage were then applied.

Progress of the case after operation

8th Aug—He was restless towards evening. Headache and pain gone. Temperature varied from 102 to 101. He was very thirsty and felt very warm. Slept well under morphia. Had retention of urine which lasted for two days.

10th Aug—Dressings were changed, wound found aseptic. Pain over the distribution of the fifth nerve entirely disappeared. Pain at the right sterno-mastoid and trapezius gone. Vision of right eye improving.

His temperature became normal on the 19th August, and he had no complaint whatever. The vision was normal, and the patient was in perfect health and spirits,—a marked contrast to his miserable condition on admission. He was kept under observation till 4th September, 1902, when he was discharged. There was no recurrence of any of the symptoms. A silver plate was put over site of the trephine puncture.

Remarks—One important point to note is the absence of any fever in spite of pus in brain, this agrees with the opinion of Dr Beevor who says that absence of fever is the rule. A contrary opinion is expressed by Drs Taylor, Roberts, Osler, and Hare. Dr Fagge says fever is generally present, but it may be absent. The abscess cavity was situated in the right temporo-sphenoidal lobe. There was oedema around it extending to the motor area, and thus causing spasms of thumb and index-finger of the opposite side. Owing to increased intra-cranial pressure and possibly some oedema at the posterior fossa (right side), the right spinal accessory nerve at its exit from the jugular foramen was pressed on the edge of bone, and caused pain and spasm at the right sterno-mastoid and trapezius.

THE
Indian Medical Gazette

SEPTEMBER, 1903

ENTERIC FEVER

THIS subject is treated with great thoroughness in the last *Annual Report of the Sanitary Commissioner with the Government of India* in the section devoted to the European Army. The mere bibliography of the authorities brought under contribution for quotation in this section constitutes a formidable list, and indicates a wide range of reading. The bacillus of Eberth manages to find access to the human alimentary canal in numerous ways, of which water appears to form the commonest vehicle, milk is a very congenial medium, and a variety of articles of food or drink are from time to time convicted of conveying the disease, causing popular scares and proving useful advertisements to the analysts, bacteriologists and medical men who rush into print in the lay papers on those occasions. Sewage-polluted soil, the dry earth trenching system, winds and dust, the common house fly, clothes soiled by dejecta containing the *Bacillus Typhosus*, personal intercourse with typhoid patients, the combination of several of these acting amongst aggregations of men in camps and cantonments, and even the accidents that may occur during the performance of enteric fever autopsies have been proved by experience and by the experiments of quite a host of observers to be the means of spreading this dire disease.

The special sanitary officers with the Army appear to be doing good and excellent service. Great pains are taken in this place or that place about the source and purity of the water-supply, its boiling, its treatment with permanganate of potassium or alum, its filtration by elaborate installations, the food supplies and kitchens are well looked after. European soldier cooks frequently displace the unclean Indian *bawarchi* and *masalchi*, disinfectants are used for excreta and for latrines, and all manner of trouble is taken. But what avails all this careful forethought when we find soldiers eating and drinking promiscuously in the bazars? Often enteric fever breaks out after troops have arrived at hill sanatoria. Why? Because the men on the

march will take water from any source, or when out shooting they do likewise. Immense pains may be taken about details in barracks and cantonments, yet it happens that the intake of the water-supply has some obvious source of contamination near at hand, as at Benares and Lucknow. The sub-soil water, or streams, or open tunnels of water may be polluted as at Rurki, or once upon a time at Dehra Dun, or the site of a tube-well may be contaminated, as at Rangoon. The cantonment trenching ground may be located near the washing ghat, and kitchen dusts, etc., may be washed and dried within a distance of from five to ten yards from where the night soil is deposited, as occurred at Bareilly.

Perhaps the most striking cases mentioned are the following. At Muzee an outbreak of enteric fever was traced to milk. It was discovered that a servant's dairy house constituted the dairy, and this was close to a native latrine. An earthenware vessel of water was kept between the hut and the latrine, and was used indifferently for latrine and for dairy purposes. At Ahmednagar an embankment was made by famine labour so as to form a large storage tank for drinking water. But it transpired that the excreta of some 10,000 to 11,000 labourers had been trenched in the bed of the proposed tank. In a hospital a sweeper was caught bringing tea in a night soil pan, and in a bungalow occupied by some subalterns fresh to India, who were mysteriously attacked by typhoid fever one after another, it was discovered that the preparation of afternoon-tea devolved on the *mehtar*.

No amount of scientific work can combat such instances as these. It is like the policy of making expensive Pasteur Institutes for anti-lab treatment while you permit pariah dogs to multiply unchecked in the villages and towns throughout the length and breadth of India. As well may you expend a large sum of money on fire-brigades, fire-engines and fire-hose, while you permit a few individuals to go about the city with lighted torches setting fire to a house here and there.

In *Truth* for the 18th June it is averred that condemned blankets and clothing from military hospitals in India have been returned to the Commissariat stores and re-issued to military native baking establishments, where this condemned clothing was worn by the bakers, and the con-

demned blankets were used for covering the masses of dough. Whether this allegation be true or not, there is no doubt about the typhoid blankets scandal in South Africa and England. It is alleged that two hundred thousand used blankets were sold through the agency of some military department, or its employes, in South Africa after the war, and that about one hundred and eighty thousand of these were shipped to London, whence they have been scattered to all parts of the kingdom. The first alarm was sounded on board the reformatory or training-ship *Cornwall* lying off Purfleet, where a score of enteric fever cases occurred amongst the lads as the result of these filthy blood-stained, dejecta-smeared, bacilli swarming blankets.

Then, again, let us turn to the case of Standerton, in the Transvaal and its insanitary conditions as described in *The Journal of Tropical Medicine* by Dr Myer Coplans, who was recently in Government employment as a Civil Surgeon in that place. Standerton has been in military occupation since 1900, and a concentration camp of 4,000 whites was formed on the opposite bank of the Vaal. There was a three miles ring of block-houses around the town, and at times as many as 100,000 men were encamped within the block-house circle, polluting the soil on all sides. After two years of war the following was the condition of the water supply—"That for the troops and inhabitants of the town and burgher camp is contaminated by the drainage of the old cemetery, and a new outspan or camping ground for man and beast. That for the railway station, used for thousands of troops and passengers passing to all parts of South Africa, is a water-supply contaminated by a sewage outfall, by a stream draining a new cemetery, by a watering place for horses and mules, by an old drift, by a bathing reach, and by the contamination of the town water-supply. In addition, along the banks of the river, 100,000 men had polluted the soil." Yet there were four sets of medical authorities—military, burgher camp, town and railway. Is it to be wondered at in time of war that disease claims such a much larger share of victims than can be killed by the most destructive explosives and the most scientific rifles and guns ever devised by the ingenuity of man?

REPORT ON THE PUNJAB LUNATIC ASYLUM FOR 1902

THIS central asylum was opened on 1st March, 1900, and to it were transferred all the inmates of the old Delhi and Lahore Asylums. It has had the great advantage of having been administered since it was opened by one and the same Superintendent, Captain G F W Ewens, I M S, except during such time as he was incapacitated by illness. In like manner Military Assistant-Surgeon J F Fleming has been Deputy Superintendent since the start. This continuity of administration is of the utmost value in asylum work, and few things are so bad for the care of the insane as frequent changes amongst the *personnel* of the staff of an asylum.

Captain Ewens has had many and great difficulties to contend with, one of the worst being overcrowding of the asylum, and especially of the hospital section. It is most remarkable that provision was made in this new institution for only 468 patients, when we consider that the year previous to the amalgamation of the two asylums the total population of insanes was 607. Even ten years ago the population was 463, or within five of the number provided for in the new central asylum. In 1902, 627 formed the total population under treatment. Just as in Bengal, so also in the Punjab, the increase in criminal lunatics demands closer investigation. In 1893 the daily average strength of criminal lunatics in the Punjab numbered 71.31, while in 1901 the average was 108.99, and in 1902 it was 104.22. In Bengal, at any rate, we are convinced that many of the so-called criminal lunatics should never have been classed as such. If a village idiot or weak-minded person becomes a nuisance or a burden to a small community, measures are taken to have the poor creature made over to the police on any sort of charge, say arson, house trespass, assault or theft. The case comes before some deputy magistrate or magistrate, who, on the evidence produced, dubs the insane a criminal lunatic, and so disposes of him in an asylum. It appears to be much easier in the mofussil to send a person to an asylum as a criminal lunatic than as a non-criminal. It is quite true that such a case may be sent to jail for ten days or so to be under the supervision of the jail medical officer, or of the civil surgeon, or of the police surgeon. The medical officer pronounces the person insane, probably adding

that he appears quiet and harmless, but this avails nothing against the police evidence or that of witnesses in the court. Quite recently we had the satisfaction, though at considerable trouble and with some difficulty, of preventing a poor harmless lunatic being convicted as a criminal lunatic on the allegation that he had kicked some one on the shin. If Government would only realise that it is much simpler for the asylum authorities to discharge cured or harmless non-criminals than it is if they are admitted as criminals, then Government might save a good deal of money now expended on the maintenance of these persons for years, or for life, in place of for a few months, or for a year or two, because the rules for the discharge of criminal lunatics are rightly so much more stringent, demanding much longer detention in an asylum, and subsequently a probationary period in a jail in many cases.

It is pleasant to learn that an entirely separate asylum for females is in course of construction, and that the compound at present occupied by them will be utilized for the accommodation of the quieter and weaker men who are at present subjected to much misery by association with the noisy, violent, filthy or troublesome members of the asylum community. Another improvement is a separate compound for boys, as it is much better that they should be kept apart both from the women and from the men.

A difficulty which appears well-nigh insuperable in India, but which may largely be overcome when new and improved central asylums have been in existence for some years, is the difficulty in procuring the proper type of asylum attendant, both male and female, especially the latter. It is a very difficult matter to get a suitable matron, or to get any but the lowest class of female attendants. As long as criminal and non-criminal lunatics are kept in the same asylum, we fear the name and nature of the "warder" will remain the same. In Great Britain they have got rid of "warders" for city, country, district and borough asylums. They have "attendants" who are properly trained in their duties, which include nursing, and they are encouraged to improve by prizes, rewards and examinations for promotion, and we believe pensions also.

Malarial fever, dysentery and chronic diarrhoea are the most frequent diseases amongst the inmates, and this applies specially to dysentery

Pneumonia is not common, but is very fatal when it occurs, as may well be expected with such patients and in such a climate. Tubercular disease was a cause for anxiety when the asylum was opened but laying out the hospital enclosure with grass had a most excellent effect, which tends to show that the bacilli were disseminated in the dust that was constantly prevalent.

In the Punjab, as in other provinces, the determination of the causes of insanity is a matter of great difficulty, more so in India than in Europe or America, where there are fallacies enough. As Captain Ewens says—"Here many of the lunatics admitted are unknown people who have been found wandering about the bazars and from whom nothing can be learned, so that a large number have to be returned as "cause unknown," while in many of those otherwise classed this is probably supposition. The information received with these, usually founded on vague police reports, is always inadequate and often at variance with the statement of the relatives, or the men themselves on their recovery. The schedule sent in with them usually bears every evidence of having been filled up perfunctorily and rarely contains more than mere conjectures. Indeed, the only reliable information is that obtained after their recovery from the patients themselves or from the relatives, and these often show a strong objection to reveal the true facts. There is a great inclination on the part of all to attribute many of the causes to the use of drugs, *charas*, &c., and though some of these may be in error, the evidence is conclusive that, despite the opinion of some to the contrary, a large amount of the insanity in this country may be ascribed to their use. The subject is well worthy of more extended study." With reference to drug insanity, we would point out the valuable indication in *recent ganja* cases which a former Superintendent of the Asylums at the Presidency in Calcutta drew attention to, and which is mentioned in one of the *Bengal Asylum Reports*. We mean the *ganja* callosity on the right thumb, and the corresponding pigmentation and hardness in the centre of the left palm. The *ganja* callosity is on the opposite side of the thumb to the tobacco callosity, so there need be no mistake on that score. But the *ganja* victim must be seen while, or soon after, he is in the habit of rubbing the *ganja* with his hands for his daily use, because the

callosity becomes inconspicuous in the course of a few weeks, or a month or two. Of course this is no test for *ganja* victims who purchase their *ganja* ready prepared, or who get a servant to do it for them. Still it is a useful indication, where it exists, which the Police, the Jail Medical Officer, the Civil Surgeon, and the Asylum Superintendent may find of use at times as confirmatory evidence.

Before closing this article, we venture to suggest another very simple matter, and that is that the different Provincial Governments might so easily arrange to obtain the annual reports of all other asylums for the benefit and instruction of their own asylum superintendents. An asylum superintendent is very isolated, and he insensibly tends to go along certain grooves, which in turn tend to narrow as time goes on. Therefore it is good for him to know what is being done in other asylums in India and Burma, and for that matter in Egypt also. In addition to these annual reports it is essential that the superintendent should have a small annual sum set aside for the purchase of the *Journal of Mental Science* and for new standard books dealing with this special subject. Every asylum superintendent's office should have a small library of books treating of mental disease.

ENNORE, BOSCOMBE, BOURNEMOUTH

MEDICAL men in India are often puzzled how to dispose of many a jaded Anglo-Indian patient. He must be sent out of India, yet he may be sufficiently convalescent before or after the homeward voyage not to need treatment in a hospital, and still the discomforts of life in lodgings or in hotels, or the unrestricted joys of home or club life may not be most conducive to the invalid's recovery. It will be comforting to many to know that a new establishment has been started in the South of England which is specially suitable for cases from India, such as persons recovering from the effects of severe malarial fever, recovering from abscess of the liver, suffering from chronic dysentery, from sprue, from diabetes, from congestion or cirrhosis of the liver, from albuminuria or other renal symptoms. For patients who do not require regular bedside nursing such as is best provided in a hospital, but who do require supervision and strictly correct dieting in a comfortable home in an equable climate all the year round,

with plenty of simple amusements and light occupation free from worry, for such as these Ennore at Bournemouth can be confidently recommended. The physician-superintendent is Major Allan E. Grant of the Indian Medical Service. He has had cause to make a special study of the diagnosis and dieting of cases of diabetes and of glycosuria, and here he has a good laboratory for clinical and analytical work. Major Grant has been ten years a physician to the Madras Hospital, and was also a lecturer on clinical medicine. His book on hygiene is well known, and he is still shown in the Army List as Deputy Sanitary Commissioner, Inspector of Vaccination, Professor of Hygiene and Practical Bacteriology in the Medical College at Madras. Government recently offered him the Superintendentship of the Bacteriological Laboratory and Central Vaccine Institute in Madras, but he has been reluctantly obliged to decline this new appointment on account of his health, and owing to this cause he will probably be prevented from returning to continue his career in India. Thus it comes that he has taken up this project at Ennore, which is a fine modern mansion with accommodation for twenty people. The house has been planned to have a south and south-west exposure.

The journal *Hospital* thus describes the place—"It stands high, and splendid views of the sea and the coast line can be obtained. It is close to Boscombe Pier and the pretty public gardens near the shore, where regulated exercise can be secured by the patients, and almost every form of amusement can be had in the immediate neighbourhood. The mansion itself has a fine billiard-room, and both the public rooms and bedrooms are above the average of institutions, not only as regards size but in comfort and furnishing * * * * It is not always easy to make diabetic food attractive to patients, but we can testify that Major Grant has solved the problem, and no one need feel the least misgivings on the score of the cookery * * * * One great advantage which this establishment has over Karlsbad is that it is open all the year round, and patients can choose their own time for treatment instead of being limited to the four or five months during which the foreign places are accessible. Add to this fact the home comforts which surround the invalid at Ennore, and there can be no doubt as to which is preferable. The inclusive rate is five guineas a week, and

this includes all medical charges save the first, consultation "

Under the ordinary conditions of general practice, with the usual circumstances of home life and the routine of daily business avocations, it is no easy matter to put into practice regularly the rational treatment of diabetes. But these difficulties are overcome in an institution such as Ennore. Here the methods of treatment are those in vogue at the continental spas, and the "cure" is in the main a dietetic one.

Slight cases can frequently be prevented from developing into serious ones, moderately severe cases are occasionally cured, whilst the majority can be trained to adopt habits of life that materially prolong life, and even severe cases frequently derive benefit from methodical treatment properly carried out. In like manner the treatment of obesity can be successfully carried out with special diet and carefully regulated exercise. In such an institution as this a patient can learn at first hand the correct dietary suitable for his case and the best means of preparing it, and the knowledge acquired he can put into practice ever afterwards.

He can also be enlightened as to the amount of the most appropriate and congenial exercise suitable to his case, the judicious use of baths, alkaline waters, massage and electricity. In fact, the discipline and experience acquired by residence in such a home prove invaluable for after-treatment. For cases of diabetes the average duration of the first visit is about five weeks, subsequent visits, if necessary, will usually occupy two or three weeks. Annual courses are advantageous to cases subject to over-work, anxiety, over-indulgence, in fact to patients who cannot or will not consistently carry out all the year round the rules of treatment laid down for them.

LONDON LETTER

THE JOURNAL OF THE ROYAL ARMY MEDICAL CORPS

THE first number of this monthly periodical has been issued. The publication of it has long been under contemplation, but difficulties have arisen which have hitherto thwarted the wishes and efforts of the more progressive members of the corps in this direction. The present is a very fitting time for the realization of these—the integration of the corps, the quickening of its life and improvement of its status which recent

regulations have presaged if not accomplished, and the near completion of the College in London where the professional and scientific life of its members is expected to obtain a better moulding and more sustained stimulus. All these events suggest a special record and outlet. The appendix to the annual departmental report has hitherto constituted the only means, apart from the general medical press, of making public essays and observations on medical, surgical and medico-military subjects contributed by the officers of the Royal Army Medical Corps, but though this appendix contained every year excellent papers, they failed to attract attention and were seldom read or quoted outside of the department. The new journal will be better known as an organ of professional utterance, and more widely circulated. The fact is that the inclusion of professional and scientific material in a statistical and administrative report means a decent entombment of it. This has long been realized in India. The first number of the Journal of the R A M C promises well. It is ushered into existence by some sympathetic prefatory remarks by Sir William Taylor, and its contents are interesting. It is intended that the journal shall contain (1) Original articles written by officers of the corps, (2) Reviews and notices of books, (3) Extracts and abstracts, and (4) Official information relating to the Medical Services of the Army. All controversial and personal matter is to be excluded. The general conduct of the journal is to be supervised by an influential Committee which has been fortunate enough to secure the services of Major R. H. Firth, Professor of Hygiene in the R A M College, as its first editor.

THE RECENT BIRTHDAY HONOURS

Among the honours conferred on the occasion of the celebration of the birthday of King Edward VII, none was better merited or more warmly welcomed by the profession than the knighthood bestowed on Patrick Manson. Although Manson has, as medical adviser of the Colonial Office, rendered valuable service in colonial administration, it was not on this account that he was singled out for special recognition, but as it was expressly stated in the official Gazette, on account of his contributions to medical science and the important additions which he has made to our knowledge of tropical medicine and the prominent part he has taken in promoting the study and teaching thereof.

Public service is held in practice to be a better ground of public rewards than professional work, however brilliant. There may be justification for this view, and it may be urged that recognitions of other kinds await scientific success, but there are cases in which service to humanity demands State encouragement and approval, and assuredly Manson's is one of these. Of the remaining four knighthoods conferred on medical men Dr. Stephen Mackenzie has earned his by professional merit, and Dr. Perry and Mr. Fripp, both members of the Advisory Board, by the good work they have done in connection with the reorganization of the Royal Army Medical Board. Edinburgh men will hail with pleasure the well deserved honour done to Dr. Patrick Heaton Watson. The Indian Medical Service is represented on the list by Surgeon-General Sir Colvin Colvin-Smith, K.C.B., and Surgeon-General Adam Scott-Reid, C.B., and the Royal Army Medical Corps by Surgeon-Major Reade, C.B. (retired), and Surgeon-General Evatt, C.B., who is well known to be a most able administrator and to possess a singular talent for organization. All of these four officers have a creditable record of war service.

FREYER'S PROSTATECTOMIES

In an article published in the June number of the *Practitioner*, Major P. J. Freyer gives a summary of his operations for removal of the prostate. He had, when he wrote, performed 45 operations. The ages of the subjects ranged from 57 to 70, average 67½. The prostates weighed from ¾ to 10¼ oz, average 3½ oz. All had entered on "Catheter life"—from a few months to 24 years. The health of many was miserable. They were worn by suffering and chronic cystitis, some had vesical calculi and some were almost moribund from septicæmia. No selection was made, and every case that applied for relief was operated on. Of the 45 cases 40 recovered and were restored to good health—general and urinary. Of the five deaths, two were caused by acute mania, one by heat fever, one by toxæmia, and one by pneumonia. The record is a most creditable one, and the relief afforded constitutes on the whole a grand achievement.

THE CURE OF CANCER

In my last letter I stated that Sir Frederick Treves had announced publicly that he was anxiously looking for the discovery of a cure for cancer. From Vienna comes a report which

has created quite a sensation, that a cure for cancer has been found in the rays proceeding from the new metal radium. The announcement was made recently at a meeting of the Medical Society on very high authority, and supported by very promising details of cases. These details, which I need not repeat here, are summarised in the issue of the *British Medical Journal* for July 11th (p. 98). We shall probably hear more of this matter before long. Meantime in recollection of the manner in which Koch's tuberculin was trumpeted forth in Berlin, it is wise to receive tidings of cancer cures with caution. "Distant cows have long horns."

VENTNOR

I had recently an opportunity of visiting this health resort and inspecting the hospital for consumptives which was erected there some years ago. The occasion was a meeting of the Southern Branch of the British Medical Association. The President, Dr. Robertson, entertained us most handsomely, showed us the hospital and delivered a most interesting address setting forth the most recent views and experiences regarding the treatment of tuberculosis which he holds to be, under limitations, a curable disease. Ventnor nestles under the lofty south-western downs and cliffs of the Isle of Wight, and obtains a very free supply of fresh air and sunlight. The open-air method is carried out in the hospital as far as possible, but other means, hygienic, dietetic and medicinal, of enabling patients to overcome the bacillus are by no means neglected. I hope that Dr. Robertson's very instructive address, which contains statistics of the work of the hospital since it was opened, will appear in the *Journal*.

15th July 1903

K. McL.

Current Topics.

NOVEMBER NUMBER ON DISEASES OF THE LIVER

A GLANCE over the contributions to the *Transactions of the First Indian Medical Congress* and through the more recent volumes of the *Indian Medical Gazette* shows that the following subjects have been discussed of late years—Biliary cirrhosis in children, acute yellow atrophy, suppuration in the gall-bladder, the micro-pathology of malarious fatty liver, hydatid of the liver, various conditions producing jaundice, the etiology, pathology, and

classification of abscess of the liver, gall-stones and round worms found in liver abscesses, the bursting of liver abscesses into the pleural and peritoneal cavities, or into viscera contained in these cavities, several articles and discussions on the difficulties of diagnosis, on exploratory methods, and on the treatment of liver abscess. The impression left after perusal is that there is plenty of scope for a special number on diseases of the liver and gall-bladder in India, and that the last word has not yet been pronounced on the pathology or on the treatment of hepatic abscess. There are the tumours of the liver, cancer of the bile ducts and gall-bladder, infective cholangitis and cholecystitis, the bile as a culture medium, the anti-venomous or anti-toxic properties of the bile in serpents, the leucocyte count in differential diagnosis of liver abscess, the relation of the liver and its functions to diabetes mellitus. Surgically, more uniformity of opinion is required as to aspiration, exploratory and remedial, as to diagnostic laparotomy, the procedure where adhesions do not exist, the practice where the pleural cavity or the lung has to be traversed to reach an abscess in the liver, how best to proceed when there is pus localised both above and below the diaphragm, the questions of irrigation, curetting, and injection of cavities with quinine or iodine solutions, or iodoform emulsion. The length and calibre of a drainage tube and the best way of fixing it, the best site for rib resection. Cholecystotomy, cholecystectomy, cholecystenterostomy and choledochotomy will bear discussion. When an abscess has been opened without apparent relief, when and how is the surgeon warranted in exploring for another? When a patient, usually a native one, is brought in apparently moribund condition with an abscess that must have destroyed two-thirds or more of the liver substance, is it permissible to the surgeon to decline operation in what his experience teaches him is a hopeless case? There is much diversity of experience as to hæmorrhage in exploratory puncture or in incision of the liver substance. How should one proceed with a patient who is discharging liver pus by both the bowel and the lung? The operation for short-circuiting the circulation in cirrhosis of the liver with ascites by wrapping the lower free border of the right or left lobe of the liver in omentum and fixation to the abdominal parietes is still *sub judice*, though promising results have been achieved. Is the practice of multiple paracentesis for ascites from hepatic obstruction to be upheld or condemned? What is the best treatment for hepatic colic, both during the paroxysm and in the intervals, both dietetic and medicinal? and when should the surgeon step in? How are the conditions of acholia and atrophy of the liver associated with psoriasis or tropical diarrhoea? A discussion on climate, diet and drugs in various morbid conditions of the liver might

prove fruitful in instruction to many practitioners. It is to be hoped that the articles contributed to the special number will deal with some of these and many other points connected with the liver, because medical men in India have such excellent opportunities of studying the liver in disease that their experience should clear up matters of doubt and give authority to the best methods of procedure. Contributions for this number should, if possible, reach Calcutta before the 1st October, though articles will be received up to the middle of October.

THE ROYAL MEDICAL AND CHIRURGICAL SOCIETY

THE President of the Royal Medical and Chirurgical Society, London, has written the subjoined letter to the Director-General of the Indian Medical Service—

"I am anxious to direct your attention to a recent change in the By-Laws of this Society, which, I trust, you will agree in thinking, has a special interest for the officers of the Indian Medical Service.

With the desire of enlisting the co-operation of the officers of His Majesty's Naval, Military and Indian Army Medical Services in the advancement of knowledge of our common profession, this Society has, by a recent regulation, established a new order of its Fellowship, the members of which are to be called "Service Fellows."

It is anticipated that the privileges, which Fellowship of the Society affords,—of contributing papers to its 'Transactions,' of joining in the discussions at its meetings, in the use of its Library, and in the right of borrowing books from it,—will be held by the officers of the Services to be a material professional advantage to them.

The new regulation provides that officers on active service becoming Fellows are only liable to pay an entrance fee of £3 3s, and an annual subscription of £1 1s, and even this subscription is remitted when they are outside the United Kingdom. Under this regulation such Service Fellows will enjoy all the privileges of ordinary Fellows.

I venture to hope that you will regard this new regulation as being of sufficient importance to induce you to bring it specially under the notice of the officers of your department.

Proposal forms and other particulars can be obtained from the Secretary."

THE NEW HOSPITAL FOR INFECTIOUS DISEASES IN EDINBURGH

THIS new Edinburgh Hospital for Infectious Diseases, which was recently opened by His Majesty the King, appears to be well worthy of the city, and of its Infirmary and Medical

School It is thus described in the *Edinburgh Medical Journal* for June —

It is not a vain boast that the new hospital is second to none throughout the whole country. The site is incomparable for the purpose. One hundred and thirty acres of land, with a gentle slope southwards, protected by Craiglockhart Hill behind, and with a magnificent, uninterrupted view of the Pentlands in front, is an ideal situation, more especially when within easy access of the city. In size, the hospital will suffice for all calls upon it for many years to come. It contains 600 beds, in pavilions apportioned to the reception of patients suffering from scarlet, enteric, and typhus fevers, diphtheria, measles, whooping-cough, and chicken-pox, while an abundant number of small isolated buildings will afford ample accommodation for treating such other diseases as may require isolation. The administrative blocks consist of a splendid nurses' home, servants' home, kitchen, general offices, laundry, ambulance buildings, and pathological department, with a lecture theatre.

Owing to the extent of the site, it has been possible to provide ample recreation or airing grounds for each class of disease, and it can truly be said that nothing which modern science and knowledge can suggest in order to promote health and aid recovery have been omitted.

DESICCATED ANTI DIPHTHERITIC SERUM

THE Paris *Institut Pasteur* has prepared dry anti-diphtheritic serum for administration by the mouth in cachets or pastilles which may possibly be convenient for prophylactic use. Hypodermic injection of the liquid serum will continue to be used for cases of diphtheria, as being more rapid and reliable in action.

MR JONATHAN HUTCHINSON

IN the June number of *Polyclinic*, Mr Jonathan Hutchinson has a good deal to say on India, its diseases and its people. He hopes the term "Tropical Diseases" will soon be abolished, because he considers pathology is the same in the East as in the West, and because climate and race he believes tend to produce merely varieties and not types of disease. Leprosy, of course, comes in for a good deal of attention. We are glad to observe that Mr Hutchinson appreciates the difficulties of obtaining reliable information from natives of India by the Socratic method of interrogation. This matter is fully dealt with by our correspondent in his London letter for the previous issue. On this subject Mr Hutchinson acknowledges that "the sources of fallacy are, indeed, endless." *Inter alia* the volumes of the *Indian Medical Gazette* are described as "a mine of clinical observation."

THE MOSQUITO PLANT.

IN May Captain H D Larymore, R.A., wrote to the *Journal of Tropical Medicine* describing a plant he had discovered in Nigeria which he considered to have properties antagonistic to mosquitoes, practically driving these pests out of a house. He also avers that an infusion of its leaves has marked anti-malarial qualities. This plant is the *Ocimum viride*, a basil, belonging to the large and well-known order of the *Labiate*. The scent of the bruised leaf is described as resembling "wild thyme and eucalyptus." The basil (*Ocimum basilicum*) is indigenous to India, in Europe it is known as "sweet basil," in America it is commonly called "lavender." The basil is alleged to contain a stearoptine like camphor.

Many of genera of the *Labiate* are well known for their aromatic or fragrant essential oils. This order includes lavender, spearmint, peppermint, penny royal, majoram (*Origanum*), thyme, basil (*Ocimum*), rosemary, savory (*satureia*), sage (*salvia*), patchouli (*pogostemon*), and horehound (*marrubium*). Many plants of this order are used as antispasmodics, stimulants, tonics, flavouring herbs or pot herbs, and ingredients in perfumes. Perhaps some others may prove of use against the mosquito. In Italy, it is a common custom to burn pyrethrum pastilles inside the mosquito curtains, the fumes having the effect of stupefying these insects. This *Anacyclus Pyrethrum* or pellitory of Spain, is a well-known sialagogue, and belongs to the large order of the *Compositae*.

WE have to thank Major Plain, I.M.S., for the following information. The basil is one of the Tulsi, of which there are three very common varieties in India. There is the Asl Tulsi, *Ocimum sanctum*, which is cultivated near Hindu temples, and in the vases near riverside ghâts. It is planted beside the lingam of worship, being the wife of the stone according to the vulgar superstition. The Ram Tulsi, *Ocimum gratissimum*, is strongly aromatic. The Babui Tulsi (*Ocimum basilicum*) is simply the sweet basil of Europe.

ROYAL HUMANE SOCIETY'S MEDAL

CAPTAIN VICTOR E H LINDSAY, I.M.S., has been awarded the bronze medal and certificate of the Royal Humane Society for having gallantly saved the life of Rifleman S Rana at Hsinho, North China, on the 28th July 1902.

BIRTHDAY HONOURS

AMONGST the birthday honours a K.C.B. was conferred upon Surgeon-General Colvin Smith, C.B., K.H.S., I.M.S., retired, and a C.B. upon Surgeon-General A Scott Reid, I.M.S.

BILHARZIA IN INDIA

IN the June issue of the *Indian Medical Gazette*, Colonel K McLeod, I.M.S., in his London Letter, drew attention to the recent detection of Bilharzia amongst the natives of Bombay. As far back as September and October 1885, Lieutenant-Col G Bomford, I.M.S., found the ova of Bilharzia Hæmatobium in the large intestines of two Ordnance bullocks, which were destroyed in the cattle lines at Hastings, Calcutta, as they were supposed to be suffering from undiagnosed. Lieutenant-Colonel Bomford contributed a paper on the subject to the *Scientific Memoirs of the Medical Officers of the Army of India*, Part II, p 53, 1886.

In one bullock numerous eggs were found in the cæcum within or between the tubular glands, and in the submucosa. This bullock was born in Hansi, and came to Calcutta in 1883, from Ferozepore. In the other bullock eggs were found in piles at the margin of the anus, embedded in the mucosa and submucosa. This bullock was bought at Hissar in 1880, came to Calcutta in 1880, and had never been out of India.

Both of them being Ordnance cattle, none of which were sent from India to Egypt at that time or previously, Lieutenant Colonel Bomford considered—

"The idea that these particular bullocks may have acquired the disease in Egypt may safely be dismissed, but there still remains a possibility that the parasite has been introduced into India by other transport cattle returning from Egypt." He added that transport cattle both at Calcutta and Dum Dum frequently suffer from hæmaturia, and suggested an inquiry to ascertain whether the hæmaturia was associated with the presence of Bilharzia. Parasites of the same genus are undoubtedly found in Egyptian cattle.

EPIDEMIC PNEUMONIA

CHICAGO seems to have been afflicted with a virulent form of pneumonia. From the beginning of the year to the middle of May there had been 2,659 deaths from pneumonia, and the *Bulletin* of the Chicago Health Department states that, during the week ending 16th May, there were 172 deaths from pneumonia out of a total of 556 deaths from all causes, *i.e.*, 29.3 per cent. In passing it may be noted that there were 46 deaths from suicide and violence during the same week, which must provide work for the coroners if such is an average weekly figure. The *Philadelphia Medical Journal* states that there were 8,880 deaths from pneumonia in New York State during 1902, *i.e.*, over 50 per cent of the mortality for respiratory diseases.

THE DHOBÍ

ACCORDING to a correspondent in the *Madras Mail* the dhobí is a greater terror than is gener-

ally supposed. It is well-known that it is simply owing to the dhobí's ways that many a European gets ringworm, bugs and lice conveyed to him through clothes sent to the wash. But this correspondent asserts that clothes sent to the wash are kept for three weeks to one month, when a week should suffice. The reason he gives for this is that dhobís are in the habit of lending out the house and table-linen of Europeans for native marriages or other feasts,—of course for a certain consideration in the current coin of the empire. Certain planters are said to have discovered their sheets under and over the corpse of a native being carried for cremation to the burning ghât. This opens up such ghastly possibilities for the spread of disease that it would be well if Europeans would stir themselves and combine to ensure cleanly methods for the washing of their clothes and house linen. But Europeans are so utterly supine in these domestic matters that they prefer the risks of disease rather than to move a hand against the tyranny of their domestic servants, who know so well how to bring about troublesome complications, and how to offer passive obstruction successfully when they fear the loss of any of their perquisites by the upsetting of the established order of things. The European knows perfectly well that the dhobí's hut is just as unclean as any other native hut, he knows that the tank in which his clothes are washed is teeming with parasites which infest the skin and alimentary canal, he knows the dhobí is at a great disadvantage during the rainy season as regards the proper drying of the clothes. Yet in spite of this knowledge, where are the public steam laundries which should be at work in every presidency city and large town? In upper India it is true that each person can arrange to have his own private dhobí, living and working in his compound, but this is practically an impossibility in the cities and large towns. There is really nothing to prevent our clothes being mixed up, and washed along with the clothes of cholera, plague, small-pox and other disease-infected clothes, nor is anything done to secure disinfection or sterilization.

Review.

Malarial Fevers and Malarial Parasites — By Major ANDREW BUCHANAN, M.A., M.D., I.M.S. THACKER, SPINK & Co., Calcutta. Second Edition, Enlarged, 1903. Price, Rs 6.

THE first edition of this most useful book was published through the medium of the Central Jail Press in October, 1901, and it was very fully reviewed in the issue of the *Indian Medical Gazette* for December, 1901, at pp 471—473. It was the record of a series of observations systematically carried out at the

Nagpur Central Jail, where five microscopes were in regular use for one year. These original chapters have been allowed to remain with certain additions and alterations, but the result of investigations for six months more has been to nearly double the size of the work by the addition of a second part. The second edition forms a tastefully bound volume, with excellent type and paper, and contains a dozen coloured plates, some half-tone plates, and a couple of dozen diagrams. The publishers are to be congratulated on the result they have achieved.

We confine our attention to the second part, since the first part was examined in detail in our former review. For anyone commencing the study of malarial blood, of anophèles with their zygotes and sporozoites, and for most useful practical hints in the *technique* of experimental work, we can thoroughly recommend Part II of this book. Major A. Buchanan, I.M.S., has recently had a number of medical officers, assistant-surgeons and hospital assistants coming to him for instruction in modern malarial work, and so this part of the book is the natural outcome of the instruction he has been imparting to others.

The beginner will find hints for the finding of malarial parasites, for the preparations of blood films, for using the Romanowsky stain, and for distinguishing blood plates and blood dust or hæmoconia. He will get details of the experimental inoculation of quaitan, benign and malignant tertian, and an interesting account of the conversion of a malarial anophèles sceptic by a personal experiment *in corpore vili*. Then he will read full instructions for the collecting and feeding of mosquitoes, for dissecting them, for distinguishing their eggs and then larvæ, concerning their breeding places, the classification of anophèles, and many other points of vital interest to the student. It is a book that should be introduced into every medical college in India, and it is of especial value as being the work of an observer in India contending with the same difficulties as any other worker in India. Both the diagrams and the coloured illustrations are most excellent, and should prove of great assistance both to the college student and to the graduate who is making a beginning at the *technique* of malarial studies.

Sanitation of Mofussil Bazaars.—By G. W. DISNEY. Second Edition, 1903. MESSRS THACKER, SPINK & Co., Calcutta. Price, Rs 2-8.

THE first edition of this admirable little book was reviewed in the *Indian Medical Gazette* for July, 1902, at p 282. It won its way to favour so quickly that the issue was exhausted within five months of publication. It has been well received by the Government of India, the Secretary of State for the Colonies, the Local Governments of Bengal, Madras, Punjab, the United Provinces, Assam, the Central Provinces,

the North-West Frontier Provinces, Baluchistan, by the Nepal Durbar, and by several Native States. This augurs well for the fate of the second edition.

Mr. Disney is an Associate, King's College, London, an Associate Member of the Institute of Civil Engineers, and a Member of the Sanitary Institute. The sanitary knowledge and principles acquired in Europe he has had free scope for putting into practice as District Engineer, Muzaffarpur. This local knowledge of practical working conditions in India gives his *brochure* its special value. He not only tells you what he considers the best sanitary appliance for a particular object, but he gives the maker's name and address, the dimensions and the price of the appliance, and frequently a diagram or an illustration. For instance he tells us that "Bailey's Patent" is probably the best latrine at present in the Indian market, that it is manufactured by the Empire Engineering Co., Ltd., of Cawnpore, that its cost is Rs 118 for a two seat up to Rs 360 for an eight-seat structure. A diagram and an illustration are given as well as a description in the text of its special points. It is probably owing to Mr. Disney's influence that the Military Department have discontinued the use of tar in their latrines. He says, "It is an obvious mistake to coat the lower part of a latrine wall with tar, the antiseptic value of which, especially in a hot climate, is soon lost, and which hides and retains dirt in its composition. The usual practice is to cover a dirty latrine wall with a fresh layer of tar, thus preserving an old coat of filth and forming a fresh bed for a new one." This is all very true, but with suitable supervision and instruction the wall could be scraped and the dirt removed before the fresh coat of tar is applied. For buildings tar has an ugly effect, but we do not see the same objection for its application to corrugated non-latrines, with the precaution above stated, for it is impossible to give these corrugated non-structures much æsthetic charm. We also think that a regular application of tar is better than having rusty cast-iron latrine seats, and that a methodical application of tar keeps buckets and other metal receptacles from rusting. It also keeps them sweeter and less foul-smelling, as in like manner it improves earthenware gurnahs. If something cheaper and more efficient than tar can be found, good and well, but till then we prefer tar to nothing. In pucca buildings without doubt glazed tiles or glazed bricks are in every way much better for latrine walls and floors.

As further examples of the practical knowledge imparted by the author we may mention the Hindu Patent Urinal, made by the Empire Engineering Co., Ltd., Cawnpore, at a cost of Rs 38 for a one-seat and up to Rs 198 for a six-seat urinal. For disinfecting purposes permanganate of potash is procurable from Messrs

D Waldie & Co, Konnagar, near Calcutta, at a cost of Rs 80 per cwt, and perchloride of mercury at Rs 3 per lb. Cranley's Patent Night-soil Cart is manufactured by Messrs Burn & Co, Howrah, at a cost of Rs 150 for 75 gallons capacity, Rs 210 for 110 gallons capacity, and Rs 250 for one of 200 gallons capacity.

This will suffice to show the very practical nature of the book, which should be of the greatest use to civil surgeons for their hospital and municipal purposes, and which should be in the hands of every municipal overseer and district engineer. Even the Public Works Department officials might benefit by a perusal of this book. Want of space prevents us giving an extended analysis of the contents, beyond mentioning that the subjects dealt with are latrines and urinals, collection and removal of night-soil, disposal of night-soil and trenching grounds, collection and disposal of refuse, surface or storm-water drainage, water-supply from wells, biological system for the disposal of night-soil, and general sanitation. There are appendices giving model rules for privies and urinals, simple rules during plague epidemics, a form for regulating removal of town sweepings, a time table used for the Patna flushing scheme, a well register from Muzaffarpur, model building regulations and a handy general index.

A Manual of Plague—By W. E. JENNINGS, M.B., C.M., I.M.S. Messrs. Rebman, Ltd., London, 1903. Price 8s.

HAVING been the Chief Medical Officer for Plague Operations in the Bombay Presidency, and having six years' continuous connection with all the measures used for plague prevention, Major Jennings is specially well qualified to write a manual on plague. His special experience has brought him in close touch with scientific men engaged on experimental work in laboratories, and also with many officials specially engaged in combating plague—both as regards treatment and prevention. His object has been the production of a convenient handbook for ready reference, which should be particularly useful to those who are being called on in daily increasing numbers to deal with epidemics of plague. In this book they will find the conclusions arrived at by experience set before them in a readily accessible and systematic form. The author deals with the attributes of the infective agent, the clinical, pathological and epidemiological features of the diseases, and the methods used for its treatment and prevention. The work is dedicated to his brother officers in the Indian Medical Service, and Surgeon-General G. Bainbridge, I.M.S., has revised it and has written an introduction for it.

The first chapter contains a historical sketch of the disease in outline. Reference is made to the outbreak of plague mentioned in the first book of Samuel and by Josephus, to the epide-

mic in the time of the Emperor Justinian, to the Black Death of the fourteenth century, to the Great Plague of London, to the plague prevalent all over India in the seventeenth century, to the outbreak in Kathiawar early in the nineteenth century, and to the Pali outbreak in 1838. The similarity and the differences in the symptoms at various periods and in different countries are dealt with, and the early differentiation of the bubonic and pneumonic types is insisted on. Lastly, there is a wretched farago of nonsense, which is a transcript of the collective opinion of the members of the College of Physicians of Paris six hundred years ago. After reading this, and knowing the benighted ignorance and want of skill of the Faculty even in the time of Molière, one can scarcely be surprised at his savage attacks on the physicians, surgeons and charlatans of his time.

The second chapter treats of the general characters of the plague bacillus discovered independently by Kitasato and Yeisin in 1894. This is accompanied by numerous excellent coloured illustrations of the coccobacillus, of its diplococcal and streptococcal forms variously stained, of its cultures in agar-agar, gelatine, and bouillon, and of the naked eye appearances of such cultures. The circumstances which favour, and which prove inimical to plague bacilli, the animals which are susceptible, and their methods of entrance into the bodies of men and animals, are given in detail.

Chapter III deals with the ætiology, both predisposing and exciting causes. Of the former, there is the infectivity between human beings, that between animals and human beings, especially of the rat and perhaps of the fleas infesting the rat, and next in importance come mice and squirrels. The infectivity of clothing has been proved in numerous instances, but the infectivity of merchandise, especially of grain and other food stuffs, is not so well authenticated, unless it be through the rats and mice infesting the cereals and food stuffs. Certain houses are noted for the periodical return of the disease in them. This is explained by habitual dirt and overcrowding, by impossibility of thorough disinfection, and owing to the fact that people who sleep out in the open air for many months in warm and dry weather are driven to sleep in these once plague-infected houses again owing to cold or to rain. This re-introduces the vicious cycle of overcrowding, air-pollution, darkness, moisture and other aids to the growth and proliferation of the virus. The author lays considerable stress on the importance of the infectivity of certain houses and of certain localities, which may recur year after year. Infection by the skin is the commonest mode of entrance in the human subject, and infection through the lungs comes next in frequency. Infection through the alimentary canal is rare.

The subject of symptomatology is dealt with at some length and with considerable minuteness in Chapter IV. Passing from a consideration of general symptoms the symptoms evinced by the various systems of the body are severally described, and lastly reference is made to complications and sequelæ. In Chapter V the morbid appearances found in the different systems of the body are taken up each in their turn, and there are several fine coloured illustrations connected with this chapter. Major Jennings discusses diagnosis and prognosis in Chapter VI. Microscopic examination is only of use as positive evidence, but plague bacilli are rarely found in large numbers in the blood except immediately before death in fatal cases, so their absence cannot be regarded as conclusive negative evidence. A positive result obtained by cultivation methods is more conclusive than a similar result by mere microscopic examination, but the reverse holds true about negative results. Exaggerated involution forms, and the stalactite form, obtained by cultivation, are diagnostic of plague. Inoculation experiments are not regarded as very reliable, unless plague bacilli are found in the blood or spleen of the inoculated animal on its death from the disease. Serum diagnosis is considered fallacious and uncertain. Uncomplicated primary external bubo cases have the best prognosis. An analysis of 16,000 bubonic cases tends to show axillary buboes give a higher death-rate than buboes elsewhere, and that buboes in the left regions are more fatal than those in the right axillary femoral and inguinal regions. Bubonic cases with extensive effusion are more fatal than when it is limited. Mortality is lower amongst Mahomedans than in Hindus, and less among Parsis, Eurasians and Europeans than among Mahomedans. Sanitary conditions and surroundings influence results, *eg*, at Bangalore the mortality was 53.69 per cent amongst plague contacts in a well-ventilated segregation camp, who, on becoming affected, were removed to plague hospitals, it was 68.77 per cent in plague patients affected in the city and removed to hospital whilst the death-rate was 97.06 per cent amongst plague patients affected in the city and treated in their own homes. Most people recover who survive till the 8th day, rather less than four-fifths recover who survive until the 5th day, and about half of those recover who survive until the 3rd day.

Chapter VII is concerned with treatment in all its aspects. Medicinal treatment is purely symptomatic, and drugs must be used with caution in a disease mainly characterized by intense physical and mental prostration. The internal administration of antiseptics, *eg*, perchloride of mercury, carbolic acid, permanganate of potash and iodine tetrachloride, fail to counteract the evil effects of the virus circulating in the system, as might be expected they would fail. As regards prophylaxis we cannot do better than

quote the author's *ipsissima verba* — "We have tried and proved specifics in Haffkine's and Lustig's anti-plague vaccines, and the sera of Lustig, Yeisin, Roux, Galeotti and others. The latter have been prepared and applied principally for the curative treatment of plague, but they are also capable of exerting a prophylactic influence, which, though only transient, has the advantage of being immediately produced. The former confer a more lasting protection, but it is generally believed that this does not commence until some days after the date of inoculation. It would appear advisable, therefore, as suggested by Professor Fraser, that persons particularly exposed to infection should be afforded immediate protection by the injection of one of the sera, and more lasting protection by a subsequent inoculation with vaccine. The latter alone is generally sufficient for persons not so exposed, and, wherever plague threatens or is raging, arrangements should exist for the inoculation of all who may wish to avail themselves of it." A bubo should not be interfered with surgically before suppuration occurs, but antitoxic sera may be injected with advantage into buboes before the diffusion of the virus.

Cases of clinical interest are detailed in Chapter VIII, amongst them are those of Major Mansel, I.M.S., the first President of the Bombay Plague Research Committee, and of Nurse Joyce who attended him, both of whom fell victims to plague pneumonia in the discharge of their duties. Chapter IX is of particular interest, because in it the author recapitulates the measures which should be adopted for the suppression of plague. He considers in detail preventive inoculation, isolation of the infected, segregation of the probably infected, disinfection of the person, of clothing, of furniture and other articles and of houses, destruction of grossly contaminated articles, demolition of houses unfit for habitation, and destruction of rats, evacuation of dwellings, and removal of inhabitants of infected localities to healthy surroundings. Major Jennings lays great stress on the importance of the *early* compulsory notification of all cases of infectious disease, and the necessity for an efficient and accurate system of registration of deaths. With two such safeguards suppression of an outbreak becomes possible.

The tenth and last chapter is also of a practical nature in that it deals with the measures necessary for preventing the spread of plague. These are considered under the headings of — I—Preventive measures for sea traffic, for the departure and for the arrival of vessels, II—Preventive measures for land traffic, measures against travellers other than railway passengers, measures against railway passengers,—inspection of passengers, disinfection of baggage, and disinfection of railway carriages.

There are useful appendices dealing with the destruction of rats, inspection rules for railway

stations, forms of certificates and statement forms of the result of inspections

Although there is nothing particularly new or strikingly original in the book, Major Jennings has done well to publish his Manual, and thus to fix, as in a photograph, his prolonged experience of plague for the benefit of others without his special knowledge. The publishers are to be congratulated upon the handsome manner in which the book has been got up, and upon the beautifully clean print and illustrations.

Manual of Medicine—By THOMAS KIRKPATRICK MONRO, M.A., M.D. Baillière, Tindall and Cox London, 1903. Price, 15s. Demy 8vo, pp. xx + 901, and 38 illustrations.

THE publishers have added another good book to their excellent University Series, and the medical faculty of Glasgow are to be congratulated on a teacher and writer such as Dr. Monro. He has produced a most excellent manual of medicine which should prove most helpful to students, and also to students of larger growth in the shape of practitioners who have neglected their opportunities in their student days and others who wish to brush up knowledge once acquired but now become rusty.

Some years ago it was fashionable to relegate treatment to a back seat in text-books of medicine, and the unfortunate student was supposed to absorb the knowledge of treatment of diseases with his mother's milk or in the nursery, or to pick it up anyhow or somehow in the wards. It was much beneath the notice of the high-minded teacher, who spent all his efforts on ætiology, symptoms, differential diagnosis, *post-mortem* appearances and pathological theories. This was combined with references *ad nauseam* to the author's own particular hospital and medical school, and to his own distinguished colleagues in his own insignificant little circle. Readers will readily call to mind well-known and well-read text-books of this type. The student a quarter of a century ago was not well off as regards the subject of treatment, as doled out to him in his text-books. Doubtless this made many men turn to surgery with a sigh of satisfaction, because they found what they sought clearly and precisely stated. Well, this long digression has been made for the purpose of emphasising how much more fortunate the student of to-day is in having such a book as Dr. Monro's *Manual of Medicine* to refer to and to work with.

Dr. Monro is not above his work, and enters heartily into the subject of the treatment as well as the other points of a disease. In the scheme of this work the subject of medicine has been split up into a dozen divisions which treat of (1) Specific Infectious Diseases, (2) Constitutional Diseases, (3) Diseases of the Cardio-vascular System, (4) Diseases of the Blood and Ductless Glands, (5) Diseases of the Respi-

ratory System, (6) Diseases of the Digestive System, (7) Diseases of the Kidneys, (8) Diseases of the Nervous System, (9) Diseases of Muscles, (10) Diseases of the Skin, (11) Intoxications and Sunstroke, (12) Diseases due to Animal Parasites.

The first division on Specific Infectious Diseases is good and comprehensive. Certain little blemishes may be alluded to in passing. Pedantic terms like *caphology* and *floccitation* should not be perpetuated or encouraged. In an excellent section on enteric fever it is surprising to find all mention omitted of Burney Yeo's chlorine treatment under the heading of the antiseptic method of dealing with the disease. Calomel, salol and B. naphthol are alluded to, but chlorine is conspicuous by its absence.

In dealing with small-pox the author notes that—"The average annual death-rate from small-pox in England and Wales has been estimated at one-seventieth of what it was before vaccination was introduced. In former times it was a disease of childhood, because almost every child took it, and those who survived were protected, but in vaccinated communities, where the disease is infrequent, and people are seldom exposed, all ages are liable." It is curious that the use of atropine should be omitted in discussing the paroxysmal stage of whooping cough, and that no mention should be made of alum for the late stage of this distressing complaint.

The subject of Tuberculosis is taken up with much instructive details, and a useful remark is made concerning the three stereotyped stages of phthisis,—consolidation, softening and excavation. It is allowable, though unnecessary, to recognise these from the anatomical point of view, but from the clinical aspect, the terms are quite misleading, first because all stages are often present in a lung simultaneously, and, secondly, because a patient may be much better and have a better prospect of recovery, with a cavity in his lung (third stage) than if he has a mass of caseous material in place of that cavity (second stage). Excavation is one of the modes of healing.

The author is apparently a convert to Mr. J. Hutchinson's fish theory of the etiology of leprosy, because he remarks in all seriousness that "With the doubtful exception of parts of India, leprosy is now to be found only in fish-eating countries." He revives the old story of King Robert the Bruce having been a victim of leprosy, to which he is said to have succumbed at Cardross Castle on the Clyde. Other biographical or historical references are scattered through the book, e.g., it is mentioned that Laennec, who did so much for auscultation and for the study of pulmonary tuberculosis, himself succumbed to phthisis. It is stated that King James I of Great Britain and Oliver Cromwell both died from the effects of malarial fever. Professor Goodsir, the Edinburgh anatomist, and Hein-

rich Heine, the German poet, are cited as cases of locomotor ataxia. Napoleon I, his father, his brother Lucian, and his sisters Pauline and Caroline are alleged all to have died from cancer of the stomach. Amongst distinguished epileptics the names of the following occur—Cambyzes, conqueror of Egypt, Julius Cæsar, Marlborough, Napoleon, Wellington, Mahommed, Petiach, Molière, Sheridan, Balzac, Flaubert and Dostoeffsky. Chorea Sancti Viti, or St Vitus's dance, was applied some five hundred years ago to an epidemic of dancing mania at Strasburg, when the authorities sent sufferers to the Chapel of St Vitus at Zabein hard by. But enough has been quoted from this fascinating book to show that the subject-matter has been put in a simple and effective manner which should prove most attractive to the student. It is not a dry-as-dust text-book, but full of living interest and practical suggestions.

The Geography of Disease—By FRANK G. CLEMON, M.D., D.P.H. Cambridge University Press, 1903

THIS book takes its place in a series entitled the Cambridge Geographical Series, which is being edited by Dr Guillemard, formerly Lecturer in Geography in that University. Dr Clemon, who is now Physician to H.M. Embassy at Constantinople, will be remembered by many of our readers, as he was one of the first plague doctors sent out to India by the Secretary of State. He has also spent some time in Russia and other countries and is a good linguist, which is a necessary qualification for the work he has undertaken, which involves a study of reports, medical journals and records in several languages.

The study of disease from the point of view of its distribution over the earth's surface may be said to date from the publication of Hirsch's monumental volumes on Geographical and Historical Pathology, but these works are now somewhat out of date, and the time was ripe for a new work on the subject written in the light of the scientific developments at home and abroad during the last twenty years. The book before us, which runs to over 600 pages and contains a number of maps and charts, and a bibliography of about a hundred works which have been made to contribute to its preparation, bears evidence of laborious and intelligent study. The diseases are arranged in alphabetical order for convenience of reference, and each disease has its own monograph, long or short, according to its relative importance and the materials at the writer's command. We are of opinion that it deserves a place in the shelves of our medical libraries and will be found useful and handy for reference by the medical officers at seaport towns who frequently come across obscure crises of disease and want to ascertain the prevalence of

particular diseases in the strange places where their patients have sojourned, which will often materially assist them in making a diagnosis. The work is partly historical and contains full accounts of the great pandemics and epidemics of such diseases as influenza, plague and cholera and then transit from one country to another. Racial idiosyncrasies are touched upon. For instance under the head of tubercle we read—

Of the native troops the Gurkhas are said to be particularly liable to consumption, and it is the principal cause of death amongst them. It is to be noted, however, that in Nepal, the homes of the Gurkha race, phthisis is said to be far from prevalent, and the high mortality from this cause to which Gurkha troops appear to be liable elsewhere, must therefore be ascribed to other than racial reasons.

We are glad to see that Dr Clemon does not accept this libel on our "handy little fighting man." In our opinion the Gurkha is no more predisposed to phthisis than any other type, but so long as he sleeps during six months of the year in barracks with only 400 cubic feet of space allowed him and every aperture for ventilation stopped up on account of the cold, nothing short of an absolute racial immunity would prevent him from contracting the disease when once it had obtained an entrance in the regiment. We hope that this will catch the eye of Lord Kitchener of Khartum, and that he will order the necessary measures to be taken to stop this waste of life in those gallant regiments.

Under Mycetoma Dr Clemon writes of the streptothrix or ray-fungus of the disease—

While most observers regard the fungus as the cause of the disease, Berkeley, Cunningham and others have expressed the belief that it is merely an accidental infection of a part already the subject of mycetoma, the true cause of which must, according to this view, be looked for elsewhere.

If Dr Clemon will refer to the Scientific Memoirs we think he will find that the fungus, which Cunningham rejected, was not the ray-fungus, which had not then been discovered, but a totally different fungus described by Vandyke Carter.

Dr Clemon does not appear to have had the reports of the Malaria Commission before him when he wrote his account of this disease, or he would hardly have given *anopheles claviger* as the principal carrier of this disease, and he would have been in a position to give a more complete account of the life cycle of the malarial parasite. His description of blackwater fever is incomplete and defective for the same reason, as he states that its relationship to malaria has not been finally determined. We think he gives undue prominence to the theory that it is the same as tick-fever in cattle, which is quite untenable.

Though we have pointed out instances in which we hold that Dr Clemon is not quite correct in his descriptions, we think that his book is a creditable production, more especially

when we take into consideration that it is mainly a digest of medical writings from a variety of sources, and that he has not been able to go round the world visiting the places where the different diseases described were reported to be prevalent and forming his opinions on the spot, which would be the ideal preparation for such a work, though it would take years to carry it out. We consider that the book is well arranged and well written, and that it will supply a want.

Diseases of the Skin.—By HENRY W. STELWAGON, M.D. Philadelphia and London W. B. SAUNDERS AND Co., 1902 Rs 25

THIS is a book which cannot but enhance the reputation of both the author and the publishers, the arrangement of the book in the various sections is excellent, and the coloured plates, printing and binding everything that can be desired, but we would take exception to the gloss of the paper which is a little trying to the eyes especially by artificial light.

The author not only gives his readers the advantage of the unbiassed views of the various authorities in this branch of medicine, but also one has a distinct and definite expression of opinion, the result of his own personal experience without hesitation or qualification, which is to our mind an immense advantage, another point also to be commended is the excellence of the various lines of treatment mentioned, and the detail as regards the quantities and proportions of the various remedies recommended, but with reference to this point we must confess that we have liked a fuller explanation of the methods of Finsen by concentrated light and by the X-ray for the cure of Tuberculosis Cutis. These methods have certainly passed out of the experimental stage, and deserve a prominent reference in any book dealing with this subject.

The classification of the syphiloderms is to our mind a little too minute for the reader, especially the tubercular varieties.

The treatment of syphilis is a useful guide to the general practitioner, the author prefers the administration of mercury by the mouth, but has no objection tounction in severe cases, and recommends the ordinary blue ointment (1 diachm daily). Dr Stelwagon is no strong advocate of subcutaneous injection, and only advocates the method in the most extreme cases.

The article on Leprosy will well pay perusal, although the writer has nothing new to remark as regards treatment, he only just refers to Mr Jonathan Hutchinson's theory, but has nothing to say in its favour.

We have derived great pleasure and profit from the perusal of the book, and more so as the style is so easy and simple.

We must congratulate Dr Stelwagon on the effort, and can thoroughly recommend the book to the medical profession.

EXTRACTS FROM MEDICAL JOURNALS

SPECIAL SENSES

In the *Recueil d'ophtalmologie* for March 1903, Dr Bouchart describes a case of DEPRESSED CATARACT of nine years' standing in which the remains of the lens issued spontaneously during an iridectomy performed for leucoma. The patient, an Arab, had lost the right eye entirely and had had the left 'couched'. There was a central in the middle of its cornea a c deep. Iris not tremulous. Pupil well dilated. Tension normal, though the author remarks that in adult and aged Arabs the rigidity and sclerosis of the eye tunics often give one an idea of tension higher than it really is $V = \frac{1}{2}$ to $\frac{1}{10}$. Fundus appeared normal as far as it could be seen. Iridectomy was decided on and begun. The iris was rigid and could not be seized. While attempting it a whitish opaque soft mass passed through the pupil into the anterior chamber, and, being seized with forceps, was drawn out without difficulty. It turned out to be a membranous sac containing a shrunken lens nucleus. The iridectomy was abandoned and eserin and sterilised iodoform vaselin applied, with a bandage. The case did well, and on the sixth day diouin was used to assist to reabsorb the leucoma. Vision improved to about $\frac{1}{2}$. The author mentions that the operators produce a partial anaesthesia by a sort of hypnosis caused by monotonous and continuous incantations and religious signs. The cataract pricker of India goes one better and now uses cocaine. In the same journal is an abstract of a paper by Dr Sucker, of Chicago, asking if depression of cataract is ever justifiable, and deciding that in his opinion it is absolutely indicated in numerous conditions, which he names, and which agree fairly with those enumerated by Mr Henry Power in his paper on the same subject at the British Medical Association meeting 1901 (see *British Medical Journal*, 1901, page 1260). The after-results of 63 cases of depression of lens by Indian cataract prickers are given in a paper by Maynard appearing in the *Ophthalmic Review* for April 1903. Of the 63, 39 obtained good vision, and retained it for an average period of 4.88 years. The results were better in cases where the depressed lens had become fixed than where it had remained movable. Removal of couched lenses was considered not advisable unless attempted very soon after depression. The paper concludes with a report of the microscopical examination of a couched eye by Mr J. Herbert Parsons, Curator at Moorfields.

In *La Clinique Ophtalmologique*, 1902, appears a paper on 'Insufflation of air in the anterior chamber in tuberculosis of the iris and cornea', by Dr Felix of Leiden. It is based on the known good results of exposure of the peritoneum to air in cases of tubercular peritonitis. Professor Koster, of Leiden, instigated the research. The results have been satisfactory, and such as to warrant further trial. The technique is simple. After drawing off some of the aqueous humour by means of a discission needle, air, sterilised by being drawn through sterile cotton, is injected into the anterior chamber through the needle of a Pravaz syringe inserted through the same puncture in the cornea. Enough air is introduced to fill the anterior chamber. Reaction lasts twenty four hours, and the air is absorbed and replaced by aqueous humour in three or four days.

The giant magnet in Ophthalmic Surgery.—Dr Connor of Detroit, has a paper with this title in his *Journal of the American Medical Association* for March 21st, 1903, in which, after relating two cases, he makes some useful remarks on the best method of utilising the magnet. The great power of the magnet renders it capable of irreparable harm if wrongly directed, and of infinite good if rightly. Experimental work and clinical evidence show that at contact and up to 2 mm the power of the small magnet equals if not surpasses the giant, but from this distance to 10 mm the power of

the giant increases in almost geometrical ratio. Only small splinters which can be actually touched by the magnet, are suitable for the use of the small magnet, the large being necessary for all others. Haab, who introduced the latter, uses it for all cases. It is wise to either (1) bring the eye close to the magnet before starting the current and increase its power very slowly, or (2) bring the eye from a considerable distance toward the point of the magnet with full current very gradually. Where the current cannot be regulated, the latter method only can be adopted. If the splinter gets imbedded in the ciliary body or iris, the other pole of the magnet can be used if it be a double ended magnet, or a strabismus hook can be passed in and made to draw the splinter away from its position in the desired direction.

The failure of the magnet in Haab's practice, where it has failed he attributes to (1) firm fixation of the splinter in the posterior walls of the eyeball, (2) firm fixation in the ciliary body, (3) fixation in a fibrinous exudate, (4) splinter healed over in the lapse of months. In 165 operations in ten years Haab reports 23 failures, 39 eyes were enucleated, nine had lingering cyclitis, 19 were saved from inflammation but were sightless. Of 71 cataracts extracted, 51 had good vision. The X rays and the sideroscope have much increased our powers of localization and aided the magnet."

F P MAYNARD

SURGERY

The Surgical Aspect of Epilepsy—D J Armour (*Practitioner*, April 1903) in an article on "Some recent surgery of the nervous system" reviews the surgical treatment of epilepsy.

Gowers, in Albutt's System of Medicine, dismisses all surgical treatment, save trephining, by the sentence,—"It would be a waste of space to describe the various operations that have been advocated, whether on arteries or on the sympathetic nerves, 'which have their day and cease to be,' fashions which are not much to the credit of the profession." Sympathectomy was introduced by Jonnesco who operated 61 times for various maladies, of which 43 were cases of idiopathic epilepsy. The object is to affect the intracranial circulation as a whole by excision of the cervical sympathetic, the excision of the upper ganglion destroying the vaso constrictors of the carotid vascular area, and excision of the lower ganglion those of the vertebral vascular area. The nutrition of the cerebral cell is said to be thus improved by the slight steady cerebral hyperemia. G J Winter (*Archiv fur Klin Chir*, Vol 67, 1902) finds that of 122 fully published cases 549 per cent were unsuccessful. Hammond thinks that the operation is destined to fall into deserved disuse.

Kocher thinks that early operative statistics of cure, being too sanguine, were the cause of the present scepticism regarding the value of surgical intervention. He believes that the etiological factor in the production of epileptic convulsions is focal or general increase in blood pressure, and that scars in themselves, if aseptic, are not adequate causes of epilepsy. He regards pressure as the factor in the status epilepticus, and in operating prevents regeneration of bone by cutting the corners of the dural flap. For the relief of intracranial pressure, drainage by a silver tube of the lateral ventricles through the opening in the skull is employed.

Pierce Clark (*Medical Record*, 1901) emphasises the importance of careful medical treatment before and after trephining, and is very conservative in the selection of cases deemed suitable for operation. From cases heretofore regarded as operable, he would withdraw idiopathic epileptics in whom the seizures have a definite form of invasion. True or essential epilepsy frequently takes the Jacksonian form in front of muscular involvement in seizures. Many traumatics probably owe the focalization of their convulsions as

little to trauma as the bone idiopathics with Jacksonian convulsions. The brain as a whole in such cases is epileptogenic, one zone is only a little more excitable than another. In cases of Jacksonian epilepsy with well marked cranial trauma and an absence of neurotic family history, trephining may be done with advantage within two years after the injury and onset of the epilepsy. The chance of success, too, is much increased by steady post-operative treatment. He points out that, notwithstanding the many head injuries that many epileptics almost daily sustain, autopsy usually fails to give any evidence of brain contusion or injury. Hence he considers that in the vast majority of cases in which cranial injury is not in evidence the trauma could not have been a material excitant of the epilepsy. Traumatic epileptics often have neurotic family histories quite equal to those of the idiopathic variety. He considers that a neurotic history in Jacksonian epileptics tends to prove that in all epileptics, from whatever initiative, the pre disposition is paramount.

A fairly large percentage of those trephined are not only not benefited but made worse by operation, for no known method is yet entirely successful in preventing a re formation of old adhesions.

Clark considers that the additional pressure is a result of the convulsion and not a cause, and hence thinks that operating for the relief of intracranial pressure as a cause should not be practised (*cf* Kocher). Kocher was most successful in cases of adhesions between the dura and the pia, and moreover post operative treatment was prolonged. Many cases of idiopathic epilepsy in which Jacksonian seizures predominate are due to infantile cerebral palsies which have been overlooked. In one set of these the damage to the cortex is done during birth, but is not sufficient to produce bilateral motor symptoms. In another set a sudden cortical lesion occurs during the first two years of life. The initial convulsions are often severe, frequently unilateral, and slighter fits at a later age, distinctly begin on one side and involve this chiefly. The frequently recurring discharges seem to induce a state of brain similar to that in cases of idiopathic nature.

Frend states that a majority of idiopathic epileptics with Jacksonian phenomena have had infantile cerebral palsy, but in after years no symptom of the palsy exists except the epilepsy.

Clark summarises the present status of trephining as follows—

(1) Idiopathic epileptics with typical seizures should never be trephined.

(2) Idiopathics in whom seizures are of the Jacksonian type should be trephined only when infantile cerebral palsies can be excluded, and when the family and personal degeneracy is at a minimum. If operation is determined upon, a very thorough removal of the epileptogenic area should be made—a fraction of 1 per cent recover from their epilepsy.

(3) Traumatic epileptics may be trephined when the injury is definitely proven when it stands in direct causal relation to the disease, and when it has existed not more than two years.

(4) All epileptics trephined for whatever cause must be given post operative bromide treatment for years.

Roswell Park (*American Medicine*, November 1902) thus summarises the position—

(1) Epilepsy is the last disease to which surgical measures should be indiscriminately applied.

(2) Each case is a problem by itself—the only general laws applying are those regarding removal of peripheral or local foci of irritation and the destruction of paths of conduction which convey disturbing impulses.

(3) Patients should be seen early.

(4) Operation is only a part of the treatment which must be comprehensively medical.

(5) In cases in which amyl nitrite is useful in mitigating or warding off the attack, the question of excision of the cervical sympathetic may be considered.

Von Bechlesow (*Deutsch Zeitschrift f. Nervenheilk.*) Bd 21, 1902) operated on a case of so called chronic epilepsy with twichings preceding the attacks. Removal of the skull and dura over the motor area on one side was followed with removal of small portions of the cerebral substance in three places. Improvement followed. Removal of the opposite corresponding area was followed by sepsis and death.

Cabòla (*Rivista di Patologia Nervosa*, May 1902) among other conclusions is of opinion that (1) Jacksonian epilepsy is not always the expression of a circumscribed cerebral lesion, but may accompany very diffuse lesions, (2) there are reflex forms, i.e. due to extra cerebral stimulus of Jacksonian epilepsy as well as those which are purely neurotic (hysterical forms), (3) other forms are due to auto and hetero intoxication in which a lesion of the central nervous system is sought in vain, (4) nothing is known of the site of the cerebral lesion in marked partial epilepsy.

Sir Victor Horsley (Medical Society, London, February 1903) pointed out that epilepsy had always been treated as a disease instead of a symptom, and hence prevented a classification suitable for discussion. He proposed this: (1) Idiopathic [no gross lesion] (a) onset localised,—"focal," (b) onset generalised, (2) Jacksonian [always gross lesion or traumatism] (a) traumatic generalised convulsion or localised convulsion, (b) congenital, (c) neoplasm—tumour, abscess aneurism, (3) reflex, (a) injury of nerve, (b) injury of spines, (c) a traumatic cases, (4) hysterical epilepsy. He had had no experience of the surgical treatment of generalised idiopathic epilepsy, which in his opinion could not be arrested if once the opposite hemisphere had been brought into an unstable condition. Surgery could not do much for Jacksonian epilepsy due to trauma. As concerns cases of localised convulsion due to trauma, he considers that all cases in the motor region should be operated upon early, and then there is a very good hope of cure. In the sensory region they should be operated upon also, but there will be less promise of good result. In the frontal region operation may be undertaken, but the outlook is most unfavourable. Of course it is presumed that the operation performed is that of excision of the scar and the circumferential damaged brain tissue.

In congenital cases if operation is done in childhood, the result is very favourable. In adults, on account of the assumption of the epileptic habit by the opposite hemisphere, it is scarcely possible to produce absolute cure by surgical intervention. In neoplastic cases the diagnosis must be based not on the fit but the other evidences of a gross lesion. Of reflex cases he had had no experience. The traumatic cases were rare ones (Jackson, Densman, Bruce) in which a touch of the head produced a brief epileptic convulsion obviously reflex in type. Ovariectomy for hysterical epilepsy is unjustifiable.

R B

DISEASES OF WOMEN AND CHILDREN

An interesting case of extraction of a foetus from the urinary bladder is recorded in the June Number of the Medical Press, the case is published by Dr Bartholemy Guisez of Paris.

In the month of July 1902, the author was called to visit a poor woman, *æt* 36, who had been suffering from a sudden retention of water, which had continued for twenty two hours. She had been married sixteen years, and was the mother of four children. She had had two miscarriages, and was, at the time of the visit, three months pregnant. She had suffered from severe pains in her back, renal and hypogastric regions during her changes since her last miscarriage. Her last menstrual period was March 23rd, 1902. She became pregnant immediately afterwards, and from that onwards she noticed a sero sanguineous discharge from her vagina, it was small in amount, but constant. She also men-

tioned that she suffered from slight colic, diarrhoea, vomiting, and so forth. For three months these troubles continued, that is to say, from March to June, they were then followed by a violent attack of vomiting and severe pain in the hypogastric regions, most acute in the right iliac fossa. The patient described the pain as extending to the renal region and to the space between the scapula above, and passing down the thighs. She noticed a swelling the size of a hen's egg in the right iliac fossa, which quickly attained the size of an orange. It was painful to the touch, and after a time rapidly diminished in bulk. During this time she suffered from repeated rigors, and was feverish, had nausea, vomiting, constipation, and very frequent and painful micturition, her water came drop by drop, was blood stained and peculiarly foul smelling. This latter condition had existed for five days prior to the visit of M. Bartholemy Guisez. The urine daily became worse, it became purulent, more deeply blood stained and contained fibres of animal tissue. When the abdomen was examined the bladder was found greatly distended, it reached to the umbilicus. The poor woman was greatly excited and feverish. An examination by the urethra detected a foreign body in the bladder, more or less hard of a dark red or blackish brown colour, which appeared to fill the bladder and block the urethral canal, preventing the escape of a drop of urine. In order to facilitate examination of the foreign body two lateral slits, one on each side of the urethra, were made. These incisions permitted of the foreign body being slightly tilted upwards and back wards, this enabled the author to see and remove a large blood clot and give passage to a flow of foetid, carrion smelling sanguinolent urine, containing pus and quantities of animal debris that gave out a sickening stench. When the foreign body was removed, it was seen to be a foetus of three months, measuring, according to M. Kambanis, fifteen centimetres. The author and his friends acknowledged that they were surprised. For the following eighteen days the bladder was daily irrigated with antiseptics, and at the end of that time the patient feeling quite well, and having no unpleasant symptom, was allowed up. During the period of irrigation there was no evidence of any fistula to be found.

The author considers the case to have been one of right tubal pregnancy. The pregnancy excited inflammation in the neighbourhood of an old standing pelvic peritonitis subsequent to the last miscarriage, the inflammation caused adhesion between the tube and the bladder, and when the former burst, it poured its contents into the latter.

The womb was found to be slightly ante flexed.

(Such cases are extremely rare but not unknown. Thomas Bartholinus (*Hist. Anat. Var.*) speaks of foetal bones being discharge from the urinary passages, and P. M. Rosius (*Obser. Med. Chir.*) has met with a like case of foetal bones being removed from the urinary bladder. More remarkable still, Ebersbach (*Ephemerides*), during the process of an autopsy, removed a human foetus from the viscera. In 1878 White (*W. A. G. S.*) reported an instance of the discharge of foetal remains through the bladder, and Josephi (*L. M. and P. J.*) tells of the removal of a foetus from the urinary bladder after fifteen years. In 1802, P. R. Morlaine reported a case in which foetal bones were passed from the bladder. Sommer records a case in which foetal bones were found to form the nuclei of calculi—(Translator).)

Clinical Report of the Rotunda Hospital, Dublin.—By Dr Purroy and others. This report is published in the *Dublin Journal of the Medical Sciences*, March, 1903. Details are given of many interesting cases. Among the tables given is one of 21 cases of accidental hæmorrhage, in which we note that plugging the cervix or vagina, with the application of a tight binder, seems the favourite method of treatment. Out of 1,676 cases, craniotomy was required once in the intern department, and not at all in 2,190 in the extern

department Labour was induced eleven times Rickets, as we know it in Glasgow, seems not common in Ireland

Inversion of the Uterus—Dr Sidney Boyd, of Charing Cross Hospital, describes an unusual case of inversion of the uterus in the June Number of the Medical Press

Mrs M, *et* 29, was admitted into Charing Cross Hospital on March 6th, 1903, under Dr Armand Routh, for inversion of the uterus

History—Patient has been married seven and-a-half years and has had two children, the first in 1898, the second on September 27th, 1902 The first delivery was natural, the second instrumental On the latter occasion the birth of the child was followed by profuse hemorrhage, and as the placenta did not come away, Dr Michie, the patient's doctor, peeled it off by hand, after which the uterus contracted and retracted efficiently and the hemorrhage ceased The uterus, after removal of the placenta, presented nothing indicative of inversion as ascertained by external and internal examination The patient was a good deal exhausted from loss of blood

During the next fortnight the patient suffered from "after pains," anorexia, vomiting, and weakness The vomiting at the end of the first week was so severe that rectal feeding was practised for two days The lochial discharge was more profuse than usual, and lasted four or five days

She was given a mixture of ergot and strychnine from the first The uterus was examined once, *per vaginam*, during this time, and nothing abnormal was discovered There was a little pyrexia during the first fortnight of the puerperium, and slight phlebitis developed in both legs, which soon disappeared Convalescence was slowly established, and she got up at the end of October During November, December, and part of January the patient had some white or slightly blood stained discharge, but no pain or hemorrhage At the end of January patient began to lose blood freely, and when examined by her medical attendant on February 4th, the uterus was found to be completely inverted An attempt was made to replace the uterus by means of repositors, but this was unsuccessful, as it was found impossible to devote the necessary attention to it in the patient's home

When admitted to the hospital on March 6th, patient was very weak and anæmic, the pulse was very small and feeble—88 to the minute, the temperature was raised about one degree above normal, she was losing blood freely

On examination under an anæsthetic, a rounded tumour, the size of a hen's egg, was found in the upper part of the vagina, traced upwards, the neck of the tumour passed just inside the cervix, which was greatly distended and hardly appreciable No fundus could be felt in the usual situation on bimanual examination The tumour was drawn down by the fingers outside the vulva, and at each inverted corner, symmetrically placed, were found the orifices of the Fallopian tubes, along which a probe could be passed There was no fibroid present

Aveling's repositors were used off and on for nearly a week, for some hours daily, and on each occasion the fundus was found to have been pushed up inside the cervix, but would go no further Galabin's modified form was finally substituted, and with the help of two small hypodermic doses of morphia the patient was enabled to bear the instrument for nearly forty eight hours At the end of this time, the fundus was found to be completely reduced An intra uterine douche was given and the uterine cavity packed with iodoform gauze A small portion of the gauze was removed each day, and the patient was kept in bed for a fortnight The uterus was then found to be in a retroverted position, but was easily replaced The sound passed 2½ ins

Remarks—Two explanations of this case are possible Either she had a partial inversion during the third stage of labour which became suddenly complete four

months afterwards, or, which is less likely, the inversion began spontaneously four months after labour If the former, which seems the more probable, be the correct explanation, the absence of symptoms except leucorrhœa during the three and a half months following the cessation of the lochia is a very unusual history The reposition took a long time, but eventually succeeded, and the result has been good

The case thus bears out Dr Routh's statement in a clinique at the hospital, that provided the repositors could be used with such watchfulness and opportunity as can be afforded in a hospital, no need for hysterectomy or other operation would arise

Removal of the Pregnant Uterus in Osteomalacia—The June number of the *Medical Review* gives an excellent account of a case of removal of the pregnant uterus and appendages in osteomalacia

A woman, aged 39, came under observation Three years before she began to suffer pains in the thighs as from pin pricks She had borne four children, the last five months previous to the onset of the symptoms The pricking pain was felt only on movement or pressure, then dull pains developed in the sides of the chest, which gradually became more acute, till they rendered movement and respiration difficult At the same time she lost strength and acquired a stooping gait, the height being diminished and the head inclined forwards, so that she could walk only with the aid of a stick held well in front of her There was considerable emaciation Four months before she became pregnant, and since then, she had been confined to bed or to a chair She could not walk, and could only with difficulty hold herself erect when supported on the both sides She had but little appetite and a great distaste for meat Emaciation was very marked She had no pain when at rest, but deep inspirations caused pain in the chest, and the lower ribs were tender in the axillary line She had frequent frontal headache The movements of the limbs were not painful There was marked hypochondriasis, the ribs were in contact, and from the seventh downwards overlapped one another, so as greatly to reduce the abdominal cavity The pelvis presented the characteristic deformities of osteomalacia to such an extent that at term no alternative to Cæsarian section would have been possible The urine for 24 hours contained 178 gr of urea, and 8½ gr of phosphoric acid with traces of albumose, but no sugar or albumin

The aggravation of the osteomalacia by the pregnancy was such that the writer removed the uterus and ovaries It was necessary to protect the spinal column from injury by the tilting of the operating table Care was taken to avoid loss of blood The uterus was removed by abdominal hysterectomy, the tissues being found very friable The patient declared her pains were relieved the first evening, the appetite returned and she made a good recovery, and got up three weeks after operation After getting up she took 0.15 gr of phosphorus daily dissolved in oil, and a few days later the urine contained 271 gr urea and 21 gr phosphoric acid in 24 hours Eleven weeks later she was free from pain and able to walk and manage her house without difficulty

The writer regards this operation as less grave than the induction of abortion in osteomalacia, when the patient is so weak as in this case There is less hemorrhage and shock, and the removal of the uterus and appendages may be the sole means of avoiding a fatal issue In cases of incoercible vomiting of pregnancy, when a subsequent pregnancy is not probable, this operation may give more complete and immediate relief than the induction of abortion

Post mortem Cæsarian section **Extraction of a Living Child**—H Jungeblodt (*Deutsche Med Woch*, Sept 4, 1902, p 649)—Though Cæsarian section has been frequently performed *post mortem*, the child has rarely been saved Of 331 operations

collected by Heyman and Lange a living child was obtained in only 6 or 7. Of 107 cases collected by Schwarz not one was successful. He concluded that the operation was unnecessary because useless.

At 8.30 P.M., a woman, aged 31, died suddenly while shelling beans, about a week before her confinement was expected. Six minutes later the writer arrived. Five minutes elapsed in fruitless efforts at resuscitation. Fœtal movements were detected through the abdominal walls. The writer decided to extract the child by Cæsarian section and began the operation 17 minutes after the mother's death. The child was cyanosed, but revived after 20 minutes' constant attention and was alive 22 days later.

The child's life is more frequently saved in cases of sudden death of the mother than in cases in which death results from severe disease, such as typhoid or scarlet fever or cholera.—*The Medical Review*, June 1903.

London, Obstetrical Teaching Facilities—The May number of the *Medical Press* has a leader on "The Present State of Obstetrical teaching in London," and deplores the fact that students receive their practical education in this branch of the profession in such an unmethodical fashion, and remarks that the London School of Medicine for Women sends its students to Dublin for their training. As is very truly said, the general medical practitioner has to set one fractured bone to about every 50 maternity cases which he attends, and it is recommended that a maternity ward should be established in each hospital with a Medical school, since the only objection to this plan, namely, the liability of sepsis, has been proved to be almost a thing of the past in such institutions.

J W F R

EXTRACTS FROM FOREIGN MEDICAL JOURNALS

The Treatment of Arsenical Poisoning—

De Busscher has lately carried out a series of experiments in Heyman's Laboratory at Ghent, with a view to ascertain the real value of hydrated peroxide of iron as an antidote in cases of arsenical poisoning. Rabbits and dogs were the subjects, the preparations of the drug used being those most in use—Arsenite of Potassium and Arsenious Acid. The doses given are in every instance calculated *per kilogramme of the animal's weight*. In rabbits the minimum lethal dose of arsenite of potassium was below 10 mg 0/00. When after the dose of the drug, a quantity of hydrated peroxide sufficient to precipitate ten times that dose, was administered, the animal survived for the time, but in every case died within six months. Arsenious acid was less toxic, the minimum certainly lethal dose being over 20 mg per kilo of weight, death occurring in 12–60 hours. When, however, the antidote had been administered after the poison, death occurred within four days, when only 15 mg 0/00 had been injected, and when larger quantities had been taken death was just as speedy with as without the antidote. In dogs morphia in doses of 5–20 mg per kilo had to be given to prevent the vomiting, which is so easily excited in these animals by arsenic. Arsenite of potassium in doses of 7.5 mg 0/00 caused death within 24 hours, in doses of 5 mg within 22 days. Hydrated peroxide of iron did not prevent a fatal result, although it postponed it, 10 mg 0/00 being fatal within 26 days. But when a dose greater than 20 mg per kilo was given, the antidote had absolutely no effect. Even when a certainly lethal dose (20 mg 0/00) was mixed *in vitro* with 6 to 65 cc of the antidote, and this mixture given, death ensued within 12–22 hours. Arsenious acid was less toxic, 10–15 mg 0/00 causing death within 18 to 25 days, 20 to 30 mg causing death in 20 to 40 hours with acute symptoms, or in 34–41 days with symptoms of chronic intoxication. But when only 10 mg 0/00

were given and followed by the antidote, death took place within 84 hours, and when 20 mg 0/00 and antidote were given, death occurred within from 12 to 36 hours, i.e., arsenite of iron is less poisonous than arsenite of potassium but more poisonous than arsenious acid. The conclusion comes to by De Busscher is that the only treatment for arsenical poisoning is one calculated to remove the poison from the digestive tract as quickly as possible—emetics followed by purges.—[*Bull Soc de Méd de Gand*, January, February 1903.]

Pulmonary Filariasis—Leonel Plasencia, at the autopsy of a fatal case of typhoid, found the lungs full of embryos of *F. Bancrofti*, the microscopic appearances observed being these.—In places there was great proliferation of the endothelium of the arterioles, which were full of embryos, apparently imprisoned in a fibrous reticulum. The internal limiting membrane had given way in places, the sub endothelial layer was infiltrated with round cells, the *media* thickened and the *externa* thickened, pigmented and infiltrated with round cells. The lumen of the arterioles was considerably larger than normal, while that of the venules was constricted owing to thickening of the *intima*, and of the *media* and *externa* which were indistinguishable from each other, being much infiltrated with round cells. Here and there in the capillaries were found embryos, the capillary walls, showing, in these places, a proliferation of their cells and many leucocytes. The pulmonary alveoli were full of a granular substance composed of xanthocytes, leucocytes and the endothelial cells which had become detached from their walls, whose connective tissue trabeculae were in some places thickened, and in others eroded and giving way. The peribronchial tissue was infiltrated with leucocytes, while the lining epithelium of the bronchi was proliferated and in places detached.—[*Revista de Med Tropical*, February 1903.]

Buttermilk for Sucklings—Some time ago Teixeira de Mattos recommended the use of buttermilk for infants, and in the *Jahrbuch für Kinderheilkunde*, Vol. IV, 1902, Caro, who had been working in Bagnsky's Clinique, states that he has administered to 198 infants, some of whom were suffering from bowel disorders, a mixture of buttermilk, wheat flour and cane sugar in the following proportions: 1 litre, 25 grammes, and 35 grammes, with the result that those children whose alimentary tract was in a healthy state put on weight, even though they may have previously been only breast-fed. Infants who were suffering from acute enteritis on their admission, improved so that by the third day their dejections which had been liquid and full of mucus, became homogeneous like ointment, and even formed and firm. In very young infants starch was always found (by its reaction to iodine) in the stools, in those of greater age after the second day, there was no starch present. In some cases the buttermilk mixture was not well borne, and in these milk rich in fat was well retained.

The treatment of Dysentery—Some time ago I called attention to Plehn's calomel treatment of dysentery, and shall now describe this in detail. As soon as the diagnosis is made, and as early as possible 30 grammes (3i) of castor oil are administered, to clear the intestines, and as soon as the patient has had two or three stools, the calomel treatment is instituted, a tablet containing 3 cg (45 gr) of the salt being given every hour, up to 12 in the day, i.e., the daily dose is 36 cg (5½ gr). Tablets, not the powdered drug, are given to avoid stomatitis. In addition the mouth is disinfected with tincture of rhatany and salicylic acid during the whole course of treatment and for at least four days thereafter.

On the fourth day of the calomel treatment the calomel is replaced by Bismuthi subnitras, of which 5 gm (7½ gr) are given. Should this cause constipation, a dose of castor oil, or an enema, is administered. The diet allowed consists of thick soups, well cooked rice, broth with eggs beaten up in it, cocoa, and red wine—Bordeaux.—[*Klin Therap Woch*, 44, 1902.]

W D SUTHERLAND, M B

Correspondence.

THE USE OF THE CATHETER AFTER EXTERNAL URETHROTOMY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Some correspondence has been going on in the *British Medical Journal* as to the best form of catheter to tie into the bladder after external urethrotomy, and I think it would be interesting to learn what the practice is followed by Indian surgeons in cases of this nature.

It has been my experience that external urethrotomy is more generally called for in this country than in England, as natives do not commonly seek treatment for stricture of the urethra till they are suffering from acute retention of urine, with frequently an impassable stricture. It has been the practice at the Rangoon Hospital in the hands of Captain Duer, Captain Rost and myself not to tie any catheter in after external urethrotomy at all, and the results have been most excellent. After dividing the stricture and passing a catheter into the bladder the catheter is withdrawn, and the patient kept in bed without any further treatment for a week or ten days.

At first the patient passes all his urine by the perineal wound, but after about seven days he begins to pass some by the urethra also. A graduated Linton's sound is then passed, and in the large majority of cases a No. 8 sound passes without any difficulty straight into the bladder. A sound is now passed every other day till the perineal wound has healed, the largest sound being used, and the patient at the same time is taught to pass a No. 8 gum elastic catheter for himself. This method of treatment has proved very satisfactory, for not only does the perineal wound heal I believe as quickly as when a catheter is tied in, but the patient is saved an enormous amount of discomfort, and also the chance of contracting cystitis and the numerous other complications which frequently arise after tying a catheter into the bladder. In these cases, when owing to the foul condition of the urine, it has been thought best to drain the bladder, a tube has been passed in through the perineal wound for a few days and, on its withdrawal, treatment has been continued as above. This method of treatment has been carried out now for the last four or five years, and the results have been so good that the practice of tying in a catheter after external urethrotomy has quite been given up.

C BARRY,
Captain, I M S

MAYMYO, BURMA.

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I forward herewith the above letter from Captain Barry, I M S, Civil Surgeon, Maymyo.

I agree with Captain Barry as to the frequency with which external urethrotomy is required in this country, and as to the good results obtained in such cases by not retaining a catheter in the bladder. In fact I do not pass any instrument till a fortnight or more after performing external urethrotomy.

The "perineal stop" mentioned by Mr C Hamilton Whiteford one would think likely to interfere with the healing of the wound.

The correspondence referred to by Captain Barry appears in the *British Medical Journal* of April 24th and May 16th.

C DUER, M B, F R C S,
Captain, I M S

A SUGGESTION FOR PLAGUE TREATMENT

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—There is a certain amount of evidence not, perhaps, of a very trustworthy character, that persons suffering from diseases associated with an acid state of the blood, are less susceptible to plague than healthy persons.

There is trustworthy and conclusive evidence that, *in vitro*, even comparatively weak solutions of both mineral and organic acids are destructive to the plague bacillus.

Is there any way in which, by subcutaneous injection or otherwise, the blood of the human subject can be rendered notably acid, without danger to life, or permanent injury to health?

If so, do not the two facts I have mentioned, taken together, or does not even the latter of them create a reasonable presumption, that such a method of treatment might be found of prophylactic, or therapeutic value, or both, against plague? and would it not be worth while experimenting on other susceptible warm blooded animals with the view to putting the point to the test?

YERGAUD,
8th July 1903

I am, Sir, etc,
J W F

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BOOKS, REPORTS, &c, RECEIVED

- Annali di Medicina Navale, Vol I Fascic. III—IV, 1903
Minutes of Proceedings of the Sanitary Commissioner for Madras for the 2nd, 3rd and 4th quarters of 1902.
Annual Returns of the Charitable Dispensaries under the Government of Bengal and of the Calcutta Medical Institutions for the year 1902
Medical Missions in India Quarterly Journal July, 1903
Die Krankheiten Der Warmer Länder By Dr B Scheube Gustav Fischer, Jena, 1903
Vaccination Returns for the Province of Assam for the season 1902—1903
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Malarial Fevers and Malarial Parasites in India. By Major Andrew Buchanan, M A M D, I M S 2nd Edition, Enlarged, 1903 Messrs Thacker, Spink & Co., Calcutta
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The New Sydenham Society's Atlas of Clinical Medicine, Surgery, Obstetrics and Pathology
Fasciculi I & II on Frumboesial Syphilis (Yaws and Parangi) Price 21/- to non members
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Annual Report of the Sanitary Commissioner of the United Provinces of Agra and Oudh for the year 1902
Report of the Health Officer of Calcutta for the year 1902.
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Report of the Sanitary Administration of the Punjab and Proceedings of the Sanitary Board for the year 1902
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LETTERS, COMMUNICATIONS, RECEIVED FROM —

Col h McLeod, I M S, Lond H Martyn Newton, Esq, L R C S E., Jalaipur Jattan Major F P Maynard, I M S, Calcutta Captain C Barry, I M S, Maymyo Capt C Duer M B, I M S, Rangoon Major A E Grant, I M S, Bournemouth Major W J Buchanan, I M S, London Hosp. Asst Keshavji Motilal Mehta, Pachora Khandesh, J W Ferrell Esq, Yercaud Capt J W F Rait M B, I M S, Calcutta, Capt R Bird M D, I M S, Calcutta Major W D Sutherland, M B I M S, Saugor, Lieut Col T Pope, I M S, Madras Messrs Burroughs Wellcome & Co, London Capt G F W Ewons, M D, I M S, Lahore Antikamla Chemical Co St Louis, U S A Messrs Burroughs, Wellcome & Co, London Capt H Gidney, I M S, Loralai, Lieut-Col C M Thompson I M S, Secunderabad, Asst Surgn H N Ghosh, I M S, Rampore Boalla Dr J Nield Cook, Calcutta Capt. Clayton Lane I M S, Calcutta Capt. J D Graham, I M S, Allahabad, Major D G Crawford, I M S, St. Andrews Major F P Maynard I M S. Calcutta Capt. R H Herbert I M S, Edinburgh Major J T Culvert I M S, Cuttack Dr A Lankester Peshawar, Major F McCulloch, R A M C, London, Dr W J Wanless, Miraj

Original Articles.

PERINEAL LITHOLAPAXY IN CHILDREN

By J. GARVIE, M.B., B.Sc.,

MAJOR, I.M.S.,

Civil Surgeon, Sitapur

It is hard to know to what extent perineo-litholapaxy is practised in this country. However I wish to direct the attention of surgeons to the extent of the field lying open for this operation. That this may be profitable is apparent from the returns from the Provinces in which stone is met. The annexed table, given in the Punjab Report for 1901, shows how stone is dealt with there —

Year	By cutting	By crushing	Deaths
1899	269	1,844	{ From cutting 31 From crushing 60
1900	259	1,636	{ From cutting 26 From crushing 52
1901	212	1,807	{ From cutting 19 From crushing 48

While in the United Provinces in 1901-02 the operations were as follows —

Year	By cutting	By crushing	Deaths
1901	407	483	{ From cutting 26 From crushing 31
1902	484	487	{ From cutting 34 From crushing 30

Thus there are in the Punjab yearly about 250 operations for stone by cutting, and between 400 and 500 in the United Provinces. A very few of these are perineal litholapaxies. It is difficult to say how they should be classified, as they involve both cutting and crushing. Doubtless the vast majority of the lateral lithotomies are cutting operations performed in children in those cases in which the stone is proved to be too large to be included in the grip of the largest lithotrite which the urethra will hold.

Why should the routine method in these circumstances be to remove the stone entire? The mortality caused by pulling a stone through a practically non elastic opening is a large one. In any stone over one inch in diameter the operation involves tearing and bruising of the tissues. Apart from experiment this is apparent from the length of time the wound takes to heal. It is to be remembered the perineal litholapaxy operation was first introduced in Sindh to cope with very large stones in adults. The same reasoning which lead to the advance in treatment of very large stone in adults applies to the case of children. Comparatively the cases are parallel.

The mortality from perineal litholapaxy in children will prove to be the same as from litholapaxy pure and simple. Why the operation is not in vogue seems to be partly that many consider the mortality from lateral lithotomy to be satisfactory, and partly because that

operation is practised in outlying dispensaries where lithotrites are not provided.

In my earliest cases I made the incision a small one, just sufficient for a No 12 lithotrite to slip in and attempted to get healing by first intention. As far as I remember this was the ideal at the time the operation was introduced. In my hands this was not frequently realised. One cannot make the incision in the dark precise enough, and the lithotrite has to pass through different layers of tissue—all moveable in their planes. Also there is little to be gained from a few days shorter stay in hospital. Now I always make an easy incision, though never so free as to admit one's little finger into the bladder. When the stone is crushed and evacuated, there is no bruising or tearing of the tissues. After four or five days all the urine passes by the penis, and the wound is healed in about a week.

But I think one can go a step further, and ask surgeons to make use of this operation *sometimes* in place of litholapaxy. Every operator who frequently meets with stone knows the long time it is necessary to spend over crushing a stone in children, the frequent passing of relatively large instruments, the minute pulverisation of each fragment, the prolonged deep narcosis, and even then the straining and "crowing" that will not be abolished, the involuntary resistance to evacuation. Who has not met the small boy of five years who has passed half his existence suffering from stone? In such circumstances I suggest to the litholapaxist to try the rapid, safe, and simple operation of perineal litholapaxy. Within the past two months 13 cases of stone have presented themselves at this hospital for operation. Of these only two were adults. In these the stone was crushed, and in two children. In the remaining nine perineo-litholapaxy was performed. In children now when I find the stone to be a large one, and when I believe the crushing will be of the character described above, I make the small perineal wound, and finish off the stone with No 12 instruments. All the cases have done well, as also those done in previous years, and left the hospital within ten days. The difficulty is to keep them in long enough, as all symptoms are at once relieved and there is the merest wound in the perineum.

I hope operators will take these remarks into consideration, and that the numbers of lithotomies will diminish, and with this the mortality.

To those not conversant with the operation, the only direction necessary to give, is to measure the extent of one's incision in the deeper parts with a probe. Having satisfied oneself as to its sufficiency, to remove all instruments, and gently insinuate the lithotrite, no force is required. There need be no bruising and certainly no tearing.

THE BHOWANIPORE FOOD POISONING

BY J. NIELD COOK, D.P.H.

INDIVIDUAL cases of food-poisoning are probably more common in India than in more temperate climates, but so far as I am aware they have never been thoroughly investigated and classified or worked out bacteriologically, probably on account of the time required for such investigations and the necessity for a well-equipped laboratory. I have not previously come across any cases in India where a large number of persons were simultaneously affected by food-poisoning, except one that occurred in Madras, when I was Health Officer there, which was due to a pulse described in Dr. Watts' "Economic Products" as having toxic properties. So I think that the recent case at Bhowanipore may prove of interest as showing how such cases may occur, and the difficulties to be encountered in investigating them. The history is shortly as follows —

A Babu occupying a good position in native society gave a feast to about 800 of his friends on the 26th, 27th and 28th June. About 100 attended on the first day, 600 on the second, and 100 on the third, all the food was fresh and cooked within a few hours of each day's feast. No evil effects followed in the case of the guests who attended on the first and third days, but out of the 600 who attended the second about 85, or 15 per cent, were attacked with symptoms more or less severe, and resulting in four cases in a fatal issue.

As so large a number of guests could not be accommodated in the house, a large pandal was erected on an open plot of ground behind it, that is to say, on the south side. The food was cooked in a shed on the west side of this ground, and placed on the floor of a *pucca* shed on the east to stand until required. There is a large tank immediately to the east of this shed. The guests sat on mats in the pandal, about 200 at a time, and ate out of new unglazed earthenware dishes which had been previously washed in the tank on the east and rinsed with filtered water and tamarind. About 25 dishes were served, amongst which may be mentioned preparations of mutton, fish, prawns, mango, ice-cream and sweetmeats.

All the remains of the feast on the 26th were given away, and none, not even sweetmeats, were used on the 27th. With the exception of certain sweetmeats all the food was cooked on the premises. The cooking commenced at about 2 P.M., and was done by a well-known professional cook with 16 assistants. The ice cream was prepared in a coach-house and its verandah by two Mahomedans sent by a firm in the General Market. I have been favoured with a list of all the food-stuffs used and the places

from which they were obtained. I am satisfied that they were of the best quality, and that the meat and fish were fresh. There is no evidence that any one suffered from eating food from any of these places, and I conclude that all these things were innocuous when they were purchased for the feast. The cooking pots and ice-cream moulds have most of them been inspected and found to be in fairly good order. They were used on all three days, and poisoning only occurred on one of them, which disarms suspicion as regards them. When preparing the various dishes were stored, the meat and fish in the fodder-room and the sweets and ice-cream in the cow-shed, which had been evacuated some days previously, cleaned, disinfected with phenyle and white washed.

After the feast the guests went home and slept. They appear to have risen the following morning without noticing any thing wrong, and to have bathed, breakfasted and gone about their daily avocations. The attacks seem to have commenced in not less than twelve or more than twenty-four hours after the feast, and lasted four or five days in most of the non-fatal cases, though some of the sufferers did not recover their normal health for two or three weeks. I am indebted to Dr. Adya Nath Bose and Major R. Bnd, I.M.S., for records of the cases. The following description was given me by the latter —

"The poisoning cases I saw had a short period of incubation from the time of the feast to the morning or noon of the following day. The attack commenced with nausea, vomiting, general abdominal pain, epigastric, then later umbilical tenderness. The flux from the bowels rapidly increased in urgency and frequency. The motions were at first of the ordinary intestinal contents, but soon assumed features present in all, copious, at first watery, dark green with flocculi and shreds, very little blood, if any, passed without staining, the motion being shot out without severe pain. The vaso-motor system was quickly upset, pulse small, 100—120, soft or imperceptible, with cold sweating extremities, hot head,—fairly vigorous first sound notwithstanding, in some cases tumultuous beat causing præcordiac anxiety.

"No sense of thoracic constriction at first. Urine passed up till a late stage, no renal pain. Expression worn and tired with the lack of rest, and from pain and abdominal irritation. If the temperature ran high then some inconsequent and incoherent delirium, with a remission of temperature the mind clearing. If the case continued, the tongue got brown while still moist. There was only moderate abdominal tenderness, no distension, nothing palpable. The thirst was great. As the end approached anuria developed with increased restlessness, delirium and high temperature. The respiratory rhythm tended to assume the cerebral type."

The general procedure in cases of food poisoning is—

1 To examine the cooking pots, note what they are made of, and whether they are properly lined or tinned

2 To ascertain which dishes caused the poisoning, the source of the food supplies, and whether any other people who purchased from the same sources were affected

3 To take any that remains of the suspected food for examination

4 To obtain the clinical history from the medical practitioners attending the cases, and if possible to obtain a *post-mortem* examination in any fatal cases, note the condition of the viscera, and make cultures from the blood in the heart and liver, to be subsequently worked up in the laboratory

The following are some of the most likely causes of food poisoning in this country —

1 Cholera

2 Metallic poisoning—

(a) From badly tinned cooking pots

(b) From an irritant poison accidentally or intentionally administered in the food

(c) From electrolytic action

It has been experimentally proved that all kinds of ice-cream act on zinc when they are in contact with two metals which form a closed circuit and an acid flavouring matter is used, such as the juice of an acid fruit

3 Shellfish—

(a) Natural poisons which affect some persons much more than others

(b) Contained sewage bacteria from the water in which they lived

4 Poisoning by ptomaines, tyrotoxin, or other products of bacterial action

5 True bacterial infections by bacteria that have in some way gained access to the food. A fair number of cases are now on record in which certain bacteria have been obtained from the food, and identical bacteria obtained from the blood of patients that died produced lethal effects on guinea-pigs, similar to those of the persons who had partaken of the food and were obtained again in pure culture. Such proof is the desideratum in this large class of cases, but it is too often not obtainable when, as in the present case, all the food has been thrown away and no *post-mortem* is obtainable

In the Bhowanipore cases the symptoms were not those of cholera, or of metallic poisoning, which would hardly have produced the high temperatures, which in some of the cases rose to 105° and 106°F

They might have been produced by sewage bacteria in shellfish, but there was no evidence of shellfish from the same sources proving noxious to other consumers. The incubation in

recorded cases of ptomaine poisoning is usually from two to eight hours, but in the Bhowanipore cases it was twelve hours or more, and in one of the native papers it is stated that one of the feasters "ate all the dishes, and fell ill, even after in his customary way immediately after his return home voluntarily relieving himself of the rich load of a dinner of that sort," and did not recover for 64 hours. It is very improbable that a sufficient amount of ptomaine would be left to cause a 64 hours' illness when the stomach had been evacuated shortly after eating the meal which contained the poison

In investigating a case of food-poisoning believed to be due to infection we are met with the difficulty that the disease does not follow a well-defined and regular course, that it has no characteristic pathological lesion and that there is no one specific bacillus that we can call the bacillus of food-poisoning. But as a fair number of cases have been thoroughly worked out, if the incubation period and symptoms and duration are found to coincide generally with these cases we have good grounds for believing that the case we are dealing with is of bacterial origin. A study of the cases on record will show that a large proportion of them are connected with bacteria associated with sewage, and in many of them there is a history of the food having been exposed to the emanation from an open drain or a collection of faecal matter, or in the case of milk from its having been kept for a time in an insanitary cow-shed. Professor Delépine, as a result of some years of research in the bacteriology of epidemic diarrhoea and food-poisoning, states that the infectious properties which food frequently acquires in summer are generally due to bacilli belonging to the colon group of bacilli, of which the *B. coli communis* (Escherich) and the *B. enteritidis* (Gaertner) are probably two extreme types, and that the varieties of these bacilli, which are the most important sources of infection, are those which resemble the bacillus of Gaertner. It is probable that the most dangerous kind of infection is that produced by bacilli of this group. In the case before us there was every possibility for the food to be infected with sewage bacteria in either of two ways —

1 The unglazed earthenware vessels in which the food was eaten were washed in a very foul tank in the compound and afterwards rinsed in filtered water and tamrand

2 Several of the dishes were kept for some hours on the brick floor of a cowshed with a current of air passing over them from the tank referred to, and a heavy fall of rain shortly before, which thoroughly stirred up the stagnant water of the tank

The following report of a bacteriological examination of the water of this tank, made by Dr J N Dutt in the laboratory of the Health Department conjointly with me, shows that

bacilli, fully capable of producing such infection, were present in the water

Physical characters —

Colour—Yellow
Smell—Very disagreeable
Reaction—Alkaline
 H_2S —Nil
Sediment—Black vegetable debris with low forms of animal life

Chemical characters —

Chlorine=200 parts per mille
Free Amm=1.8 parts
Alb Amm=2.0 parts

Bacteriological examination —

Experiment I—Plate culture of $\frac{1}{1000}$ cc of water showed innumerable colonies. These were further cultivated and isolated, showing the following bacteria —

- (a) Diplo-bacilli
- (b) Staphylococci
- (c) Thin straight bacilli
- (d) Thick cylindrical bacilli
- (e) Moulds

Experiment II—Quantities of water put into Dunham's solution and incubated at $37^{\circ}C$. No comma bacilli were found.

Experiment III—5cc water put into sterile milk and heated to $80^{\circ}C$ for half an hour and incubated anaerobically in Buchner's tube at the room temperature (32° to $34^{\circ}C$). The milk was found to be coagulated within 24 hours, the coagulum was in lumps, and there was formation of gas observed.

The whey was injected intraperitoneally and subcutaneously, 1cc each, into guinea-pigs. No pathogenic effects observed.

Experiment IV—A small quantity of water was put into MacConkey's solution and incubated at $42^{\circ}C$. Within 24 hours the medium was found to be uniformly red in colour, and the fermentation tube was filled with gas.

Experiment V—From the growth in the taurocholate medium (*Experiment VI*) several agar-agar tubes were inoculated to separate the bacilli. Pure cultures of diplo-bacilli were obtained, which resemble bacilli of the colon group.

Experiment VI—This bacillus was further tested in the following media —

- (a) Lactose taurocholate broth
- (b) Glucose taurocholate broth
- (c) Sterile milk
- (d) Sterile milk after inoculation, heated to $80^{\circ}C$ for half an hour
- (e) Nutrient bouillon after inoculation, heated to $80^{\circ}C$
- (f) Peptone broth for indol reaction

Experiment VII—After 24 hours —

- (a) Was found to be reduced in colour, only the top layer showing a faint blue

(b) The tube was decolourized and formation of gas observed.

(c) Milk after 24 hours was found to be not coagulated, but after 48 hours slight coagulation occurred, and afterwards casein separated in lumps.

(d) Milk did not coagulate at all.

(e) Agar culture from this showed no growth.

(f) Very faint indol reaction observed.

Experiment VIII—A guinea-pig, weighing 250 gms, was injected subcutaneously with 1cc of an emulsion of agar culture of the bacillus on the outside of the left hind leg. The animal died within 12 hours. *Post-mortem* examination showed that the seat of inoculation had a swelling of about an inch. On dissection the muscles were found to be congested, with extravasation of blood extending to the outer wall of the pelvis. The superficial muscles of the abdomen were found soft and congested, portions looking black. A quantity of sanguineous fluid was found collected under the skin near the seat of inoculation. The intestines were found to be congested, spleen small and congested, liver too was slightly congested. The auricles of the heart contained dark blood. Both the lungs were found to be normal.

Cultures from the extravasated fluid of heart's blood and of blood from the liver all showed diplo bacilli, similar to those with which the animal was injected. Microscopically the bacilli were found to be actively motile, they were short and thick and had no spores.

IX Conclusion—The behaviour of the bacillus in the different media shows that this bacillus belongs to the colon group. The absence of formation of gas in lactose medium differentiates it from *B. coli communis*, and the absence of spores distinguishes it from Prof Klein's *B. enteridis sporogenes*. In pathogenicity and other properties it resembles in many respects the *B. Enteridis* of Gaertner or some such bacillus.

It was unfortunate that I got such late information in this case that I was unable to get any remains of the food, or ask the medical men in charge of the fatal cases to try and obtain *post-mortems*, or at least allow me to take specimens of blood from the fatal cases. Under the circumstances I can only draw the conclusion, on general grounds, that the poisoning was due to bacteria of the colon group gaining access to the food from the water of the tank, or the subsoil and displaced by the rainfall of over $3\frac{1}{2}$ inches in a few hours. I understand that the police will be instructed to take prompt action to prevent such delays in any future cases, that the unfortunate occurrence may not be an unmixed evil if it brings it home to the educated native of this country that hygiene has a practical as well as a theoretical side, as he is very ready to talk about sanitation but too frequently fails to apply the principles he preaches in the every-day affairs of life.

A NOTE ON SOME CASES OF POISONING BY SCOPOLIA LURIDA,—ATROPACEÆ

[Proceedings of the Peshawar Medical Society]

By MAJOR A J MACNAB, FRCS,

IMS,

Q O Corps of Guides

BELIEVING that few, if any, cases of poisoning by this plant have been yet recorded, and in view of a repetition of the occurrence which I am about to relate, under similar circumstances, I am led to think it worth while to write the following account of an incident that occurred during the Black Mountain Campaign of 1891, and to give a description from notes made at the time of a series of serious symptoms that rapidly supervened after the leaves and succulent stalks of *Scopolia lurida* had been eaten in mistake for a very similar and quite harmless plant known to Guikhas as Tambākū sāg or Lāinga. It is an accident that might well happen again during a frontier campaign, for the plant is not very uncommon in the hills beyond and within the border though local in its habitat, and there is evidently a great similarity between the poisonous scopolia and the harmless Tambākū sāg that Guikhas are accustomed to gather and eat, chopped up with their food like spinach in their native hills of Nepal.

On the night of May 20th, 1891, I was summoned by the Hospital Assistant of my regiment, then in camp at Serai on the Black Mountain, to the lines of No 5 Company (Guikhas), being told that seven or eight men were lying in their tents in various degrees of delirium and unconsciousness, which had come on shortly after they had eaten their evening meal. On reaching the tents I found a havildar and seven men, all Guikhas, suffering from a series of symptoms which were very distinctive of belladonna poisoning, viz., marked dilatation of pupils, a feeling of constriction in and dryness of the throat, a peculiar variety of fussy delirium with hallucinations and loss of the power of co-ordination in the lower extremities. Ascertaining that they had all eaten the leaves and parts of the stalks of a plant they called Tambākū sāg, which had been given them by some men of their own company who were on picquet some 1,500 feet higher up the hill, and whom they had been to visit that afternoon I at once examined a specimen of the plant lying near, and, from its apparent resemblance to belladonna, and certainly that of the symptoms to those of belladonna poisoning, after giving each man an emetic dose of zinc sulphate—which in each case had the desired effect—I administered morphine hypodermically to the two worst cases, and then had them all taken to the nearest Field Hospital. Arrived there, the

next three hours were employed in giving them carbonate of ammonia to emesis, and in keeping the men constantly moving. This treatment answered very well, and by 2-30 A.M. all were in a condition which admitted of their being put into tents, a careful watch being maintained upon them. The havildar who throughout seemed least affected returned to the regiment next day, and the remaining seven men the day following. I examined all of them on the evening of the day on which they returned to the regiment, and found that they still were suffering from various degrees of dilatation of the pupils, inability to accommodate, and giddiness. All these symptoms, however, soon entirely disappeared and the men were sent back to duty.

Their symptoms more in detail were as follows. Some 15 minutes after eating the herb the men said that they experienced a feeling of constriction in and dryness of the throat soon amounting to an inability to swallow, rapidly succeeded by a sense of muscular weakness and tremors, so marked and so rapidly supervening that they found themselves without sufficient strength to pull their *chapatties* to pieces preparatory to eating them. Giddiness and inability to stand upright was next experienced, and finally the condition of delirium and semi-consciousness in which I found them. To this it may be added by way of fuller description, that most of them were unable to answer when spoken to, and those that could answer had forgotten their own names. Some lay on the ground in a dazed state, others sat up constantly making fidgetting movements with their fingers, picking up small particles of sand or pebbles from the ground, or appearing to be searching for something they had lost, and occasionally looking up with a half-vacant, half-wild expression.

In none was there anything approaching a state of collapse, the pulse was good if a trifle rapid, respiration was never stertorous, and no pain was complained of save the dryness in the throat. The mouth was dry and salivary secretion was arrested. The patients exhibited all varieties of gait from trifling unsteadiness to complete loss of control over their lower limbs.

It being dark and all quiet in camp and all the affected men being together and alone, their condition for some time escaped notice, and it was not until three hours had elapsed after having eaten the herb that I was called to them. It was fortunate therefore that their condition had not become more serious. Four of them had vomited before the emetic was given them. Only one had passed urine before loss of consciousness, and then in small quantity and with some amount of stranguary.

At the time of re-writing this account I happen to have been fortunate enough to have found specimens of *Scopolia lurida* in abundance at Nathia Gali. The stalk from its thick succulent nature is difficult to preserve, and I

therefore only show specimens of the leaves. The plant has been, I may say, identified by an eminent botanist as *Scopolia lurida*. A short description of the plant is as follows: A herb growing very locally at an elevation of 7,000 to 8,000 feet, with a tap-root 1 to 3 feet long furnished with small rootlets, the stalks, several of which spring from the same root, are green in colour, solid, succulent, with an acid juice. The leaves are alternate, petiolate, estipulate, differing in size according to their position in the stalk, the lower and older being more or less obovate with faintly acuminate apices, the higher and younger are oval and taper to a point, their margins are very faintly crenated, almost entire. The plant for which it was mistaken is, the men say, very similar in appearance, and is known by them in Nepal as *Laringa* or *Tambáku ság*, even here in the Galis it is known as *Tambákú ság*, but its poisonous properties are recognized. There is said to be this important difference between the poisonous *Scopolia lurida* and the harmless *Laringa* of Nepal, viz., that in the former the stalk is as has been described solid and succulent, in the latter hollow. There are doubtless many other more technical distinctions not to be easily noticed by the uneducated.

A GENERALLY UNKNOWN SOURCE OF ENTERIC FEVER

By W BEEVOR,

SURGEON MAJOR, SCOTS GUARDS,

Surgeon to H E the Governor of Bombay

How frequently do we hear of the "Enteric Season," and how seldom can any one give a satisfactory explanation of the idiom. Upon one point, however, all seem to agree, viz., that its epoch is coincident with the rainy season. Few people seem to recognise a subtle enemy existing within their houses, I refer to the bath. Let me first remind the inhabitants of this country that the water in which they enjoy so frequently the refreshing effects of a "plunge wash" is drawn from polluted sources, stores of water collected from surface drainage—water that has passed over soil laden with dead animal and vegetable products, and hence loaded with millions of enemies to human life. It is palpably more poisonous during, and after, the rainy season, further, any collection of impure water is rendered more potent by the advent of a break in the rains, for then, a hot sun throws its genial influence upon the colonies of bacteria collected together in tanks, lakes, wells, etc. Thus they increase and multiply to their heart's content, and then aqueous habitation becomes a seething mass of iniquity. Into this we plunge with a vigour, begotten of

its refreshing effects, and our natural repulsion to collected perspiration. As the head is ducked beneath the surface, or a sponge passes over the mouth and nose, the lips are separated, the nostrils dilated—what results? Some of the "seething mass of iniquity" passes into the cavities of both mouth and nose, at times, is even swallowed direct. Reflect now, what may have happened? The interstices of your teeth, tongue, throat, and the complicated mechanism of your nasal mucous membrane, all constitute places where bacteria are caught and lodged, unless these areas are well washed out immediately, you are apt to swallow then arrested bacteria in saliva, nasal mucus, or food, precisely as if you had taken a drink from your bath. A worse condition pertains if a person has caught cold, or the lining membranes are inflamed, and then vitality lowered from any cause, for then the surface constitutes a suitable breeding ground for bacteria, finding this congenial habitat, they rapidly multiply, and may be carried into the digestive tract in many ways.

I trust then it is clear to all that they can imbibe poison from water, without actually drinking it, and I maintain that the bath water of this country is frequently a supply depôt. Even the water employed for washing teeth is frequently contaminated, especially in railway carriages, hotels, etc., and becomes an obvious source of infection.

Having drawn attention to this subtle enemy in our midst, I beg to offer advice upon some methods of avoiding his ill-effects. The best is to have all bath water boiled for at least five minutes, but this is obviously impossible in a great many conditions of life. Nature, however, has supplied us with safety valves, the use of which is little known. The lips, when ducking the head below water-level, or sponging the face, should be firmly compressed together. If any water inadvertently enters the mouth, splutter it out. It is surprising how easily water runs into the nostrils, and a good plan is to inhale all the air possible, "take a good long breath," before the face is immersed or sponged, blowing this air through lips and nostrils, so long as they are in contact with the water. Should you feel the peculiar "sting" of water when touching the living membrane of the nose, blow down the nostrils violently, at least three times, thus ejecting what may seem a ridiculously small amount to fuss about, but which may contain many thousands of poisonous bacteria. If our enemy has entered the mouth, spit him out without hesitation—"how nasty"! doubtless many will say,—true,—but the less nasty of two evils. Your saliva is cleaner than your bath water, and should they become inadvertently mixed, surely 'tis preferable the mixture should be relegated to the bath rather than to your body.

Further, always wash the teeth, and gargle the throat immediately after a bath, use a strong antiseptic tooth powder—and plenty of it, most people do not apply half enough of the antiseptic to their teeth and mouth. Three fresh supplies should be employed at each washing—one for the centre, and one for each side of the mouth. All these theories and precautions apply equally to those who bathe in rivers or streams. It has been proved beyond doubt that many of our cases of enteric fever in armies, especially on active service, have originated by the imbibition of contaminated water whilst bathing.

ADRENALIN AND ITS USES IN GENERAL SURGERY, ESPECIALLY APPLIED TO OPHTHALMOLOGY

BY HARRY GIDNEY, F.R.C.S. (EDIN.), D.P.H. (CAMB.), &c
CAPTAIN, I.M.S.

I HAVE now used Adrenalin in my surgical work for over two years, and have been so struck with the many advantages that it possesses as a most powerful and rapid styptic, hæmostatic and astringent that I have ventured to place before the profession this small article, giving a short account of the history of the drug, its various forms in use, methods of administration, action, and a few selected cases in which I have used this drug illustrative of its action.

Adrenalin (synonyms "*suprarenal liquid*," "*renoglandin*")—It is the active principle obtained from the supra-renal glands, and was first discovered by Professor Jokichi Takamine, of New York, some few years ago. It is said to be many times more powerful than the ordinary extract obtained from the supra-renal glands. Hitherto when a solution of the supra-renal gland was required for immediate use it was customary to prepare it from the desiccated gland, but this was found not to be practicable in cases of emergency. The difficulty at first was how to obtain a stable solution of this drug, *i.e.*, a solution that would not only retain all its full powers of action, but also remain stable, and consequently a solution of this adrenalin was made, but this did not seem to answer very well, for it was found to soon decompose and deteriorate in quality. To overcome this difficulty a solution of adrenalin chloride was made, to which was added a certain known quantity of a solution of "*Chloretone*." This chloretone is a drug which is said to possess slight antiseptic and marked anæsthetic properties. A watery solution of chloretone is obtained by adding the crystals of the salt to some warm water and allowing it to cool, the undissolved chloretone will separate from the liquid and the resultant solution will contain about 1% of chloretone. This combination of adrenalin and chloretone

has apparently solved all previous difficulties, for in this we have a superior drug, one with not only valuable styptic properties, but also anæsthetic and antiseptic qualities. Adrenalin chloride solution contains as a rule about 0.8 to 0.5 % of chloretone added to it, and this preparation is said to be roughly equivalent in its anæsthetic action to a 2 % solution of cocaine. One part of the preparation now made is said to represent one part of the fresh gland, or, in other words, roughly about four-fifths of one part of the desiccated gland. There are various forms of adrenalin now in the market for use, *viz*:

(1) *Pulvis adrenalin (Takamine)*—This consists of a whitish crystalline powder, being the active principle obtained from the gland. It is insoluble in cold water, though somewhat soluble in alcohol and hot water. It is very difficult of manipulation and is seldom, if ever, administered in this form, being merely of scientific interest.

(2) *Solution of adrenalin chloride (strength 1 in 1000)*—This may be diluted to any strength required either with previously boiled water or normal salt solution, the latter preferably. This form may be used as a local application in cases of hæmorrhage. It is not a very stable compound and should be used fresh, for it often very soon turns dark brown in colour and should then be discarded as useless. It is not safe to use this either hypodermically or intravenously unless when the solution is quite clear and fresh. It may also with advantage be used in the form of a spray. Dose internally, 5 to 30 minims.

(3) *Solution of adrenalin chloride cum chloretone*—This is physiologically standardised by the manufacturers, and is the safest and most stable form of the drug in use. It consists of the following—

Adrenalin chloride (Takamine)	one part
Normal sodium chloride solution (with 0.5% of chloretone)	1,000 parts

This solution can either be used locally, or when freely diluted in the form of a spray, (dilution for spraying from 1 in 10,000 to 1 in 20,000), it may be safely injected subcutaneously in doses of from 3 to 5 minims, or administered internally in doses of from 5 to 30 minims. This is the form of the drug I always use in my surgical work.

(4) *Supra-renal gland desiccated*—This is also physiologically standardised, and is the most convenient and best form for internal administration when a prolonged and general systemic effect of the drug is required. It may be taken in the form of a powder, tablet or capsule, each containing two grains of the desiccated powdered gland. It is well adapted for the preparation of extemporaneous solutions.

When the liquid adrenalin chloride with, or without, chloretone is used in the form of a spray, it should be diluted either with previously boiled water or normal salt solution, strength as

required, but usually a dilution of from 1 in 10,000 to 1 in 20,000 proves effective. I always dilute it with normal salt solution which I obtain from sodium chlorate tablets, each tablet consisting of 11 grams of the pure salt, by dissolving one of these tablets in 4 oz of distilled water you get the normal saline solution. When used in the form of a spray it is advisable to use an atomizer with a small reservoir, so as to avoid evaporation of the drug. Should a regular large-sized atomizer be used, only enough of the liquid to cause the atomizer to work, or enough for a day's requirements should be placed in the bottle. The liquid adrenalin chloride with chlorotone may be used after dilution as an injection into the bladder or urethra, as a vaginal or uterine plug, as a plug in the alveolar socket after extraction of a tooth, or by means of a swab to arrest any local hæmorrhage from any part of the body, &c.

"**PHYSIOLOGICAL ACTION**"—*Externally* when applied in its original strength, *i.e.* (1 in 1000) to a bleeding surface, skin or mucous membrane, it rapidly checks the hæmorrhage by producing a rapid and sudden contraction of the arterioles, reducing the lumen of the larger and obliterating those of the smaller vessels, and rendering the parts acted upon absolutely bloodless. Its astringent effect being produced whether the tissues be inflamed or normal, and the ischæmia so caused is more or less complete being dependent upon the time-method of application and strength of the solution used. This action is of course limited to those parts which the liquid comes into contact with. This blanching action is most noticeable when it is applied to the mucous membrane of the eye, when on the instillation of a drop or two an instantaneous whitening of the conjunctiva takes place unaccompanied by either dilatation or contraction of the pupil, the action being more marked when the conjunctiva is reddened and inflamed. It is a most powerful, rapid and effective styptic and astringent, quickest to act when applied in its original strength of 1 in 1000. In the same way it acts on inflammatory tissue of a fibro-cicatrical character. It is beyond any doubt a more powerful, less dangerous and less objectionable styptic than iron and other kindred drugs.

Internally—It is non-poisonous, non-accumulative, and non-irritative, though it at times causes gastric disturbances unless well diluted. It is said to raise the blood pressure and retard the pulse rate, also to act as a most potent cardiac and vaso-motor stimulant, acting directly on the cardiac muscles, stimulating them in the same way as digitalis does, only much more powerfully and rapidly. It is also a rapid and valuable hæmostatic.

THERAPEUTIC USES—The clinical usefulness of adrenalin is very great and extensive, and owing to its power of rapidly and effective-

ly producing vaso-motor constriction, it is adapted to the treatment of all inflammatory conditions. The drug is also of extreme value in arresting hæmorrhage during all surgical operations. It is a drug whose use is indicated whenever and wherever any local hyperæmia exists, more especially so in inflammations of mucous surfaces such as the eye, throat, larynx, pharynx, urethra, bladder, nose, rectum, vagina, uterus, stomach, &c. It is used not only to stay hæmorrhage when it exists, but also as a preventative or controlling remedy, given either internally or externally prior to an operation, so as to lessen the amount of bleeding during the performance of that operation. It is a non-irritant to mucous membrane unless when used too frequently and in excess.

I have not had much experience of the use of this drug in medical cases so cannot speak of its value, but on reading the literature on the subject I find that it has an extensive use, and is admitted to be the most powerful and rapid cardiac stimulant and tonic we have, being chiefly used in cardiac affections, hæmatemesis, hæmoptysis, hæmophilia, hæmaturia, menorrhagia, *post-partum* hæmorrhage, purpura, scurvy, &c. It is said to be the most rapid restorative in chloroform and other forms of anæsthetic syncope, and in such cases it is advisable to administer it intravenously.

I have used this drug mostly in my surgical operations, both major and minor, and shall now cite a few selected cases out of a number in which the results have been rapid and effective.

Case I (Strength used 1 in 1000)—A fracture of the vertex of the skull which I trephined. There was a great deal of dural hæmorrhage, as one of the larger branches of the middle meningeal artery was torn, there was also a large amount of capillary oozing. This bleeding gave me some trouble, but immediately ceased on swabbing the parts with (1 in 1000) adrenalin chloride solution.

Case II (Strength used 1 in 1000)—Internal hæmorrhoids which bled very profusely, and frequently caused a deal of trouble. Here I arrested the hæmorrhage at once by inserting into the rectum a plug of cotton-wool soaked with adrenalin chloride solution, this was left in for ten minutes, all bleeding having ceased after the plug was taken out. I frequently resorted to this mode of action and invariably arrested the hæmorrhage.

Case III (Strength used 1 in 1000)—This was a case of skin-grafting over the left elbow-joint after removing a mass of dense cicatrical tissue from the parts consequent on a burn. In this case I found this drug of great use. It is a well-known fact and rule in these cases that before applying the skin grafts there should be absolute stasis of all capillary hæmorrhage from the exposed surfaces, and every Surgeon knows how very troublesome

these delicate operations are, what a length of time it takes to stay all bleeding, and how many a good and useful skin flap has become detached and useless owing to neglect of this point. In this case I tried pressure over the bleeding area, but it took too long, so I applied adrenalin chloride solution over the parts with almost immediate cessation of all oozing, and it converted a lengthy and sanguinary operation into a short and comparatively bloodless one.

Case IV Hæmorrhage after extraction of teeth. There is often very troublesome bleeding after extracting some teeth, and in these cases I have often plugged the alveolar cavity with a pledget of cotton-wool soaked in 1 in 1000 adrenalin chloride solution with speedy results. It is also useful in bleeding and spongy gums due either to *scurvy* or "*pyorrhœa alveolaris*".

Case V I have used it in several cases of epistaxis. At first I used to plug the anterior nares with pledgets of cotton-wool soaked in this solution, but lately I have used it in the form of a spray, and am very pleased with the results. Nasal surgery, I am of opinion, offers a very extensive field for the use and trial of this drug, to reach the whole of the nasal mucous membrane it should be administered in the form of a spray by means of a fine atomizer. Even if the nasal mucous membrane and passages be greatly swollen, it will be found after repeated use of the atomizer that the whole of the nasal passages can be reached and acted upon by the drug, the mucous membrane contracting as the spray comes in contact with it. There is, however, one precaution to be remembered when using this drug for nasal affections, and though the danger is very slight and remote, yet it is safer to warn the patient, *viz*, as the nasal mucous membrane so rapidly contracts and gets shrunken on the application of this drug, it produces a dilatation or patulous condition of the various sinuses that open into the nasal cavity, *viz*, frontal, ethmoidal, maxillary and sphenoidal sinuses. Now should the patient be suffering from a purulent nasal discharge, and he blows his nose, there is a likelihood of forcing this contaminated discharge into these sinuses, and thereby exciting similar inflammation of the surrounding regions. When using this drug in the form of a spray, I always start my case with a weak solution, *viz* (1 in 20000 or 1 in 15000), and gradually increase it till I get to a strength of 1 in 5000.

From the contraction of the tissues which follow its application it will be seen how useful this drug should be in the dilatation of urethral strictures rendering the passage of the catheter easier and bloodless, while the anæsthetic action of the chlorotone will help to render the operation painless and facilitate micturition. In hæmaturia an injection into the bladder of (1 in 20000) solution is strongly advocated and

praised by some surgeons as being very rapid and effective in its action.

Case VI In a case of mild *post-partum* hæmorrhage I tried this drug with speedy cessation of the bleeding. Here I swabbed the uterine cavity with it. Many gynecologists put great faith in this drug now in cases of *post-partum* hæmorrhage, and other hæmorrhages arising from the uterus and vagina, but I have not had any experience in these cases.

Case VII This showed very clearly to me the rapid and powerful styptic action of adrenalin, *viz*, I had operated on a lady (in England) for multiple mammary abscess and had necessarily severed some branches of the long thoracic artery. The pus was evacuated and wound plugged, a couple of hours afterwards I received an urgent call to see the patient, on my way to the house (suspecting hæmorrhage) I purchased some adrenalin from a chemist. On arrival I found her bleeding profusely. Radial pulse absolutely gone. Brachial pulse hardly perceptible. Heart sounds very weak indeed, and she was in a most serious condition of collapse. I at once removed the plug and swabbed out the bleeding cavity with 1 in 1000 adrenalin chloride solution, with most excellent results, the bleeding stopped after a very short time. I also gave her two doses of 20 minims each internally. The patient rapidly rallied from her condition and made an uninterrupted recovery.

VIII It is especially in my ophthalmic work that I have given this drug an extensive trial, and with such pleasing and gratifying results that I am a strong advocate of its use whenever opportunity offers itself.

CONJUNCTIVITIS—I have found in this disorder that the instillation of a 1 in 5000 to 1 in 2000 solution of this drug reduces the inflammation and considerably cuts short the progress of the disease. I usually apply the solution (diluted) over the inflamed parts of the conjunctiva by means of a soft camel's hair brush, taking great care to attack all the affected parts. When I first used this drug, *viz*, the ordinary liquid adrenalin (1 in 1000) I found that, although it effectively blanched the tissues, yet it caused considerable irritation to the eye. Now I always use the preparation containing chlorotone, starting my cases with a dilution of (1 in 5000) and gradually increasing it to (1 in 2000), and sometimes using it in its original strength, *viz* (1 in 1000), as here I found the chlorotone has a decided local anæsthetic action relieving much of the photophobia and pain which are usually most distressing in conjunctivitis. The eyes in very severe cases are swabbed out every four hours, but every six hours, or twice daily, I have found to answer most purposes in outdoor ophthalmic work. I always keep the solution ready in three different strengths, *viz* (1 in 2000), 1 in 4000 and 1 in 5000), this is very

handy and convenient for outdoor work where time is precious

IRITIS—I have used this drug in some cases of this disease with beneficial results

Last year in England I used this drug extensively in ophthalmic work. After enucleation of the eyeball, I found a swab soaked in a solution of this drug arrested all hæmorrhage from the stump and cut conjunctiva, and considerably shortened the operation. I have also used the drug in a number of cataract extractions with iridectomy, and I am now fully convinced of its power of arresting or lessening the bleeding which so often arises from the cut ends of the iris after performing the iridectomy, and which is often so troublesome and annoying to the surgeon when it fills the whole of the anterior chamber and obstructs the view of the deeper parts. I have found that this is entirely or very considerably obviated by the previous instillation of adrenalin. I would not advise the use of the drug after the anterior chamber has once been opened unless it be freely diluted and sterile. In two of my last cataract cases I used no cocaine allowing the chloretone to take its place, and I found it acted very well, though it is slower and less powerful than cocaine.

In *chemosis* this drug is of very great value, and by so rapidly causing a shrinking and reduction of the swollen limbus conjunctivæ has often been the means of stopping total destruction of the cornea, a complication which we have always to guard against in several cases of chemosis. In one case of Mule's operation for evisceration of the contents of the eyeball I used this drug with most excellent results. In this operation, as is well known, the total arrest of all hæmorrhage from the inside of the eye before the introduction of the glass or metal globe is of paramount and vital importance, and this usually takes a long time. Well, in my case I swabbed out the inside with a 1 in 1000 solution of adrenalin chloride solution and effected this total arrest in a very short time, converting a somewhat lengthy operation into a comparatively short one. Quite recently I have had a number of cases of ectropion on which I have operated for radical cures. Most ophthalmic surgeons know how troublesome these cases are to attack, for the bleeding from the cut surfaces though not extensive is always so obstinate and hides everything just at the time when a clear field to work on is required. Pressure by means of swabs or sponges is not only unskome and only effective so long as the pressure is applied, but is also irritating to the cornea and conjunctiva. In these cases I have used adrenalin with very pleasing results. I instilled 4 to 5 drops of the 1 in 1000 solution into the eye about 10 minutes before commencing the operation, and again swabbed the lid to be operated on just before I made my cuts, also

during the progress of the operation. The procedure was rendered almost bloodless, and I was able to complete the operation in about one third of the usual time it takes. In a few cases of radical cure for pterygium I have also used it effectively.

Perhaps the most illustrative case I have had of its use in my ophthalmic practice was one of symblepharon a short time ago when I obtained my mucous flaps from the patient's mouth. When I started to divide the adhesions profuse bleeding occurred, hiding the parts entirely from my view. I then used adrenalin solution (1 in 1000), and the rest of the operation was comparatively bloodless. In this operation you require total arrest of bleeding of the exposed surfaces before you can attempt to place your mucous flaps into their new positions, and to attain this end I found adrenalin invaluable. I also arrested the capillary oozing from the mouth where I cut out my mucous flaps by applying this solution. I have also used it in traumatic injuries of the conjunctiva due to grit and particles of sand where there is a certain amount of pain—photophobia, lachrymation and localised redness and inflammation. The chloretone acts very efficaciously as a local anæsthetic. In some few cases of corneal ulcers in which I have tried it, I have not met with very good and decided results. In one case of chronic granular ophthalmia with pannus in which I tried adrenalin, I operated on the upper lid removing all the trachoma bodies with little or no hæmorrhage occurring. As is well-known in all operations on the eyelids and conjunctiva the greatest worry and annoyance to the surgeon is that constant and obstinate oozing of blood which always takes place, and it is in all these operations particularly that the styptic action of adrenalin is appreciated to its full value. The above are only a few of the cases in which I have used this drug. I have given it an extensive trial (using it whenever an opportunity occurred) for over two years now, and I cannot speak too highly in favour of it as a most powerful, effective and rapid styptic and a most useful in allaying mucous inflammation, and as a preventative, or controlling agent, given before eye-operations so as to reduce or lessen the amount of the bleeding during the operation.

Professor Bates, of New York, states that when adrenalin is given in conjunction with cocaine, he found that the eye was not only not anæsthetised but also irritated. He seems to think that one drug impairs the property of the other, but I have never found this happen and have often given them together, the cocaine producing its local anæsthetic effects normally and adequately.

I feel sure if this drug is more extensively used than it is at present that in a short time it will be recognised as one of the most valuable acquisitions to the armamentarium of the ophthalmic surgeon.

From what I have written on the subject it is only too evident that adienalin being such a powerful vaso-constrictor and contractor of erectile inflammatory tissues, and so rapid a styptic and hæmostatic that it is of great importance and value to the general surgeon. We know that the secret of aseptic surgery is to see that there is a total arrest of all hæmorrhage before completing the toilette of any operation, for if this is not attended to and capillary oozing goes on, a clot is formed under the incision, and this invites the entrance of suppurative micro-organisms into it, forming as it does an excellent and ideal pabulum for them to feed and thrive upon. Now in adienalin we have a drug which will rapidly produce this total arrest of hæmorrhage and thereby materially help our wounds to heal by first intention. Its use also obviates the necessity of superficial drainage tubes as is so often required.

In conclusion, I cannot help but say that in all cases of minor surgery where we desire to arrest bleeding from any cut or exposed skin or mucous surface, we have in adienalin a most useful, powerful and rapid drug—one that is non-poisonous, non-accumulative and non-irritant, and has the decided and all important advantage over iron in that it causes no destruction of the tissues when used as a styptic, and thereby does not prevent the healing of any wound by first intention.

In ophthalmic operations, especially those on the conjunctiva and eyelids, we have in adienalin a very useful, efficient and much wanted drug—one that is non-irritating to such sensitive surfaces as the cornea and conjunctiva, and renders these operations comparatively bloodless. This drug being so rapid in its styptic action converts tardy and lengthy operations into short ones, and so saves an immense amount of time to the surgeon. In fact after my experience of the drug I go so far as to assert that no surgeon should be without it.

A Mirror of Hospital Practice.

A CASE OF FREYER'S OPERATION FOR ENLARGEMENT OF THE PROSTATE

By F P MAYNARD, M.B., F.R.C.S.,

MAJOR, I.M.S.,

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B D, aged 65, a Hindu hawker from Burdwan, was admitted to the Mayo Hospital on 22nd May 1903, suffering from retention of urine. He had gonorrhœa twelve years ago. He had had difficulty in micturition seven or eight years, and for the ten or twelve days preceding admission he had not been able to pass any urine

except by the catheter, it had contained blood for some time.

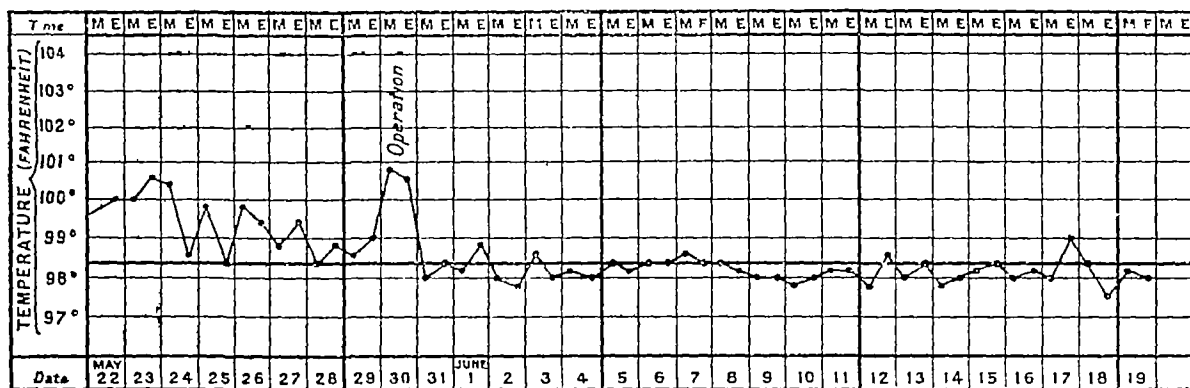
On admission the bladder was much distended—the size of a cocoanut—above the pubes, and it was tender. The patient was in much distress with coated tongue, temperature 100°. The urine, red and containing clots, was drawn off with a large prostatic catheter which passed in a very long way. The prostate was felt through the rectum forming a large, even, fairly tense but elastic movable tumour of considerable size. On microscopic examination the urine showed much blood and fairly numerous large round and oval cells containing many black (pigment?) granules. Alkaline reaction. He was an old, feeble, spare man, and his mind was not clear. He was worn out with suffering and wandered at times. Treated by regular catheterisation and washing out of the bladder he did not improve. The bladder regained no power, and the urine always contained blood. I decided to open the bladder suprapubically and remove the tumour unless it proved to be malignant, as was feared, in which case drainage would relieve him.

On 30th May, under chloroform, the bladder was opened suprapubically, after it had been washed out, eight ounces of boric lotion were injected, a prostatic silver catheter passed, and the penis tied over it by rubber tubing. Cystoscopy was not performed as no instrument was available, nor, with such bloody urine, would it probably have been of any use. As the bladder was going to be opened in any case, it would moreover have merely wasted valuable time. On introducing the finger two large tumours were felt, one on either side, and a median smaller one, all projecting into the bladder from below. The mucous membrane covering the left larger one was snipped through with blunt-ended scissors, and with the finger the enucleation was begun. On getting down and separating the growth, it was found difficult to separate it completely, so the other large tumour on the right side was separated in a similar manner. The 'median' growth was then loosened and the whole removed from the bladder. Considerable force had to be used, especially along the posterior surface of the triangular ligament which was distinctly felt mapped out. The counter-force was supplied by the two fingers of Dr M. N. Chatterjee, the Resident Medical Officer, in the rectum. Without counterpressure it would have been impossible, I believe, to separate the tumours without damaging the bladder seriously. One's own finger in the rectum would have been able to work more in unison with the intra-vesical finger, but there was no rubber glove available to protect it and leave it possible to use it again at once without fresh sterilisation. The bleeding was fairly free but not alarming and soon stopped on the bladder being washed out with hot boric lotion. A fourth nodule, about an inch in

diameter, being felt low down and to the left, was then removed. The urethral opening at the middle of the triangular ligament was clearly felt, and no prostatic urethra or any prostatic substance remained as far as could be ascertained, nothing but the raw surface of the bladder left by the removal of the tumours. This lessened very rapidly by the contraction of the bladder, so that by the end of the operation there was no bleeding and the raw surface was much reduced in size. The bladder wall was thickened but not ulcerated. The upper part of the abdominal and bladder walls were sewn up separately, and a half inch drainage tube sewn

his recovery was rapid and uninterrupted. On June 16th (17 days after operation) he first passed urine *per urethram* twice. On the 19th the tube was removed. On the 20th he sat up and was passing urine half and half by wound and urethra. On 29th the note is "Is passing urine four or five times in 24 hours now, and at night has held it seven hours, five hours, and one night nine hours. The stream is full, no residual urine and flow under complete control." On June 30th he was discharged cured and in good condition.

The tumours weighed $3\frac{1}{4}$ ounces and are preserved in the Medical College Museum. The



into the bladder through the lower end of the incision. The operation lasted eighteen minutes altogether, twelve minutes from the beginning of the incision to the drainage tube being fixed in. The shock was slight, and the patient's pulse good afterwards. The catheter was withdrawn during the operation.

On May 31st (next day) the bladder was washed out through a silver catheter and some clots escaped from the wound. The temperature the evening after operation was $100^{\circ}6'$. It had been $100^{\circ}8'$ just before operation. No more fever followed this. The bladder washings were continued daily. On June 8th it is noted that his mental condition was curious. He was muddled and talkative—hysterical at times crying, &c. Next day (9th) he was wandering. Took the drainage tube out several times, tying it up in his loin cloth and then giving it up to the House Surgeon as something precious, denying having removed it. On June 11th, early, there was a little bleeding from the bladder wound. Later, at 9 A.M., very severe hæmorrhage came on, a large quantity of blood was found in the bed, and the bladder became distended with clots. These were washed out and lead acetate lotion injected without avail, and not until he was given calcium chloride, and adrenalin internally did the bleeding stop. The patient was very faint, pulse 138. By evening all hæmorrhage had ceased. Next morning (12th) he was much better and the curious mental condition gone. From this time



photograph reproduced shows them about two-thirds of their natural size with the 'median'

lobe tacked on below, and the accessory nodule also. Across the opposite surface to that shown in the picture is a broad band of tough fibrous tissue over one inch broad and fairly thick, very like that shown in Fig 3 of Mr. Fieyer's paper in the *British Medical Journal* of July 1903.

Remarks—Every surgeon has noted the rarity of cases suffering from enlargement of the prostate in the native of India, and no reasonable explanation has been offered. If the prostate were the purely sexual organ some would have us believe and its enlargement the result of its excessive use, this rarity in India would be even harder to explain. The prevalence of stone in India has been attributed to the habitual performance of micturition by the native in the sitting position with his buttocks on his heels. This attitude, I have ascertained in more than one individual, does lead to the leaving behind of some urine (residual therefore) which can be subsequently entirely passed in the standing position. Possibly the bladder of the native, becoming early habituated to the presence of residual urine, resents less its presence in greater amount if that occurs later on in life. The facts that this operation was performed in a native of India, and that as far as is known it is the second published of its kind in India,* have led to its being now recorded.

After a careful study of Dr. Fieyer's papers and the rather acrimonious discussions thereon, I have come to the conclusion that anyone who admits the existence of two prostatic capsules, as nearly everyone does now, must admit the possibility of performing the complete operation in the way Fieyer claims he does perform it. Seeing its comparative ease of performance and remarkably successful results in a very bad class of patients, we must also admit that it is a great advance on any of its predecessors, such as partial prostatectomies, perineal prostatectomies, &c. If the adenomata are of large size and there is no prostatic substance left, as the result of pressure, (as apparently in the case now recorded,) then enucleation and extirpation mean very much the same thing, and the microscope will not help one. But when the adenomata are of moderate size it ought surely to be possible to settle by sections whether the prostate has been entirely removed, as well as the adenomata, or not. Yet after nearly three years of vituperation no evidence of this kind has been brought forward. Where the enlargement is due not to adenomata but to matting by inflammation and the predominance of unstriated muscle fibres and fibrous tissue, as stated by Bruce Clarke to be the case in many enlarged prostates, then microscopic examination showing the extent of the parts removed is even more

desirable. It is a remarkable fact that several of the opponents of Fieyer to originality while stating that it is impossible to remove the whole prostate, at the same time claim to have on several occasions removed the entire prostate themselves.

NOTES FROM CONTINENTAL EYE CLINICS

IX—DENMARK.

COPENHAGEN, October 14th to 18th—I visited the Private Klinik of Professors Hansen Giut and Bjerum. It was started 40 years ago by the former surgeon, who is now 72 years of age, and who has been teaching students here for many years. After long up-hill fighting he obtained from the Government a small annual subsidy towards his hospital work, and at the same time they appointed him Professor of Ophthalmology in the local University. There is no other state-recognised eye-hospital in Denmark, but it is expected that, within the next four years, the present building, which is merely a house adapted to the purpose, will be replaced by a new State eye hospital. Hansen Giut handed over the professorship to Bjerum five years ago, but he still takes his fair share of the hospital work, and operates in a style that would do credit to a younger man. Shrewd, cheery and full of 'go' he is a most interesting man to meet, he claims to have seen most of the new ideas of to-day come and go times and again, but he is still willing to take up and try any novel suggestion that commends itself to his judgment.

There are about 6,000 patients yearly, the beds are divided into a free part and a part for paying patients, the staff consists of the two professors, two permanent assistants, and a varying number of casual assistants (old pupils).

Preparation of patient for operation—The lids are washed with soap and warm water some hours before operation, and then with a solution of Hydragryl perchloridum (1/6000), they are again washed with this solution just before operation, it being also used to syringe out the conjunctival sac, the lachrymal passages are never interfered with if healthy, otherwise they are fully treated beforehand, in operating, on the latter class of cases, no dressing is applied, and a Fuchs' shield is substituted for a bandage, in order to avoid the damming up of dangerous secretions. Hansen Giut has tried epilation of the lashes before operation, but gave it up, as he found it inflicted so much pain, neither he nor Bjerum cut the lashes.

Before the day of operation, the patient is taught by practice to open his eyes widely, to look downwards, etc.

All instruments are boiled before operation, and then transferred into a solution of Hydragryl

* See case reported by Colonel J. Smyth, I.M.S., of Bangalore, in the *British Medical Journal* of May 8th, 1902.

perchlor (1/6000) It is admitted that the edges of cutting instruments are soon spoilt by this treatment

Cataract—I saw both Hansen Giut and Bjerum operate, the patient lies on a low couch, and the operator faces him for the left eye, and sits behind the head for the right, the patient's hand is held up, and he is told to look at it, a spring speculum is inserted with the shank over the patient's nose, and is *not* held by an assistant, the knife is made to enter and emerge in the sclerotic, whilst the blade cuts out in the clear cornea well inside the limbus, the speculum is then removed, and Hansen Giut always does an iridectomy at this stage, the capsule is lacerated by a cystitome, and the lens is removed by making the patient look down whilst pressure is made from below on the eye with a spoon, cortex is massaged out by pressure through the lower lid, firm bandage pressure is then applied to the operated eye, the other being left open, a Fuchs' shield is substituted for the bandage on the third day, though for a few nights longer the bandage is applied during sleeping hours Bjerum's method is the same as the above, except that he only performs iridectomy in about 40 per cent of his cases, his indication for an iridectomy is any difficulty in satisfactorily replacing the iris after delivery of the lens, *hence his iridectomies are always made after the escape of that body*, he denies that an iridectomy at this stage is more dangerous than one made before the lens escapes Of his simple operation cases, 4 or 5 per cent demand iridectomy or cauterisation for subsequent prolapse, whilst a further number show slight prolapse or upward displacement of the pupil, not calling for interference He makes little of the danger of prolapse, a view Hansen Giut does not share He is very careful to replace his iris well after the lens has been removed He would not venture on the simple operation if he could not immobilise his patient after operation

Discussion of secondary cataract—Both Hansen Giut and Bjerum use a Graefe's knife, and make as long an incision as possible in the capsule, through a widely dilated pupil, the patient and operator sit facing each other and an artificial light is used

Detachment of the retina—Hansen Giut has had wonderfully good *temporary* results from tapping the collection of fluid, and has repeated the operation on the return of the symptoms, but has *never found a permanent good result* from it

He is dissatisfied with subconjunctival injections for the above condition, and he considers that rest in bed is the only treatment of any real value, even that yields him but poor results

Lachrymal obstruction—They slit the canaliculus, and dilate with sounds, at the same time using irrigations of solution of Hydrag perchlor

1 in 6000, they rarely extirpate the sac, for though they have had excellent results from the operation, they consider the remedy too severe for the disease in most cases They evidently consider that the operation is being overdone in some quarters

Glaucoma—Bjerum's standard operation is iridectomy, he does sclerotomy when the previous operation has failed, and also uses it for Buphthalmos, he does not hesitate to do repeated sclerotomies when necessary For simple glaucoma he very seldom operates

Bjerum considers the Paris (Giroux) Astigmometer vastly preferable to the Utrecht instrument, the Wollaston prism of the former gives it a great superiority, he is using the new pattern with inverted figures on the disc, the axis of astigmatism can be read directly from the refraction of these figures on the cornea

At Hansen Giut's request I explained to him the steps of May's operation for restoration of the lower fornix, which I had seen performed by Gullstrand (*vide* Notes on Sweden), and I had the pleasure of assisting him to perform it on an eye in which Lupus had been arrested by the Finsen light treatment The graft appeared to be taking well when I left

Bjerum demonstrated his *method of perimetry* to me An opaque dull black curtain 2 metres square is let down from the ceiling like a blind, and covers part of a wall facing large windows, the patient is placed with his chin on a rest, 2 metres from this screen, which has a central white button for fixation, and which is marked out into circles by a ready mathematical calculation, these circles are very indistinctly marked, so that they do not attract the patient's attention, but can be seen by the operator looking at them from close at hand The test-objects are white ivory discs of different sizes (from 1—10 mm in diameter) which are carried on a long blackened rod The examination is begun by using a large disc, and is continued with the smaller ones when greater accuracy is required With a disc of 1 mm diameter, not only is the whole of the normal field restricted, but an area of reduced visual acuity can be demonstrated to exist around the blind spot in normal eyes Scotomata are much magnified, as can be gathered from the fact that the blind spot measured in this way is about 7 inches in diameter If the small test objects are used, the restriction of the visual field is shown to be *very considerable even in early glaucoma*, at a stage when the ordinary methods give feeble indications, if any Lastly in *all cases of glaucoma* it can be shown that *the area of reduced vision*, however various it may be in its other characters, *leads up to, and is continuous in one direction or another, with the blind spot* Bjerum has found this sign a constant one even in very early glaucoma, whilst no such characteristic relation

between the relative or absolute scotoma and the blind spot is found to occur in optic atrophy. He therefore regards it as a very valuable differential sign.

A CASE OF DEATH FROM SEPTIC DUODENITIS AFTER RELIEF OF ACUTE INTESTINAL OBSTRUCTION

By ARTHUR NEVE, F.R.C.S.E.,

Mission Hospital, Kashmir

THE following case may be worth publishing as illustrating the not infrequent fatal termination of apparently successful operations for relief of acute abdominal conditions, and as suggestive of a causation not often proved.

S. K., an orderly, sturdy and well-built, received a violent blow from a troublesome horse on the left side and abdomen.

There was injury to one or two ribs, but he did not come under my treatment for about a week, and was then improving and continued to do so for another week, though still with a slight rise of temperature and vague pains referred to the splenic region.

Suddenly, on May 7th, symptoms of intestinal obstruction set in, with considerable pain. When admitted there was no distension, and no localized tenderness, a large enema with inversion of the body failed to relieve him.

The next morning symptoms were much the same, and he consented to an operation.

Operation—I was assisted by Dr. E. F. Neve, and Major Edwards, C.M.G., I.M.S., was present. I made a six-inch incision including the umbilicus which I excised. Coils of somewhat congested and distended small intestine presented. A little to the right side I found some flaccid coils and followed them, but they led the wrong way, and proved to be above the obstruction. So it became necessary to lift out some of the distended ileum, and almost immediately it was found to be tightly strangled in the neighbourhood of the ileo-cæcal valve by a thick inflamed band. This was severed, and ligatured.

The purplish gut above the constriction showed no signs of ability to contract, so I opened the bowel and a large quantity of liquid feces as well as gas was washed and gently pressed out. Most of the intestine was now replaced in the abdomen, and I closed the incision in the bowel with modified Lembert sutures, and closed the wound.

Progress—He did not suffer much from shock (strychnine and adrenalin had been given hypodermically, also a brandy and water enema). A few hours later he passed flatus and continued

to do so. Some nutrient enemata were given and some liquid feces were passed on the day after the operation. He vomited several times, chiefly bile-stained gastric juice. Washing out the stomach gave relief. Towards evening there was hæmatemesis, of almost tarry consistency, and on the next day he was distinctly jaundiced. He was allowed to sip barley-water, but the stomach was again washed out, as vomiting recurred. His temperature kept below 100°, and the pulse was about 120. He had some pain in the gut of the stomach, but no discomfort in the wound which, when dressed, looked healthy. On the following morning he died suddenly. No autopsy was performed.

Remark—The salient features of this case were—

(a) The relief of obstruction before irreparable damage had been done to the strangulated bowel.

(b) The recurrence of vomiting.

(c) The appearance of hæmatemesis.

(d) The jaundice.

(e) The sudden death on the third day.

Some of these symptoms may be attributable to the effect of chloroform and to the original condition of the bowel, but in their totality they point to an acute duodenitis and to septic thrombosis in the region of the liver. In some ways it resembles cases of *acute yellow atrophy of the liver following operation*, such as have been described by Bastianelli, Mintz and others. For a discussion of this and for a good bibliography I would refer to a recent paper in the *Annals of Surgery*, March 1903, p. 371, by Max Ballin.

In the cases there alluded to there was invariably an inflammatory condition present in the abdomen at the time of operation, though frequently remote from the liver, as for example in torsion of the pedicle of ovarian cysts.

Handling of the bowels probably predisposes to the onset. In my case I had deliberately examined the foramen of Winslow, and in doing so had to handle the duodenum. This may have determined a local infectious process set up by the intensely toxic bacillus coli, which in his cases, Mintz found in the liver. There was no general toxæmia, his mind was clear, the temperature not high, and he had slept during the night, on waking he had spoken to his attendants, roused himself a little to wash his hands and drink a little water, then lay back and drew sheet over his head again. A few minutes elapsed before it was discovered that he had stopped breathing, and was dead. Possibly in movement he had dislodged a thrombus which arrested cardiac action.

In the paper above-mentioned ten cases are collected, nine of which proved fatal between the second and tenth day after operation.

NOTE ON AN UNUSUAL COMPLICATION MET WITH DURING OPERATION FOR PUNCTURED WOUND OF ABDOMEN

By PERCIVAL MACKIE FRCS (ENG.),

LIEUT., I M S

A CAVALRY trooper was admitted to the Station Hospital, Lucknow, on May 14th, 1903, for wound of the belly-wall.

An hour before admission he was at lance practice and, whilst going at a gallop, dropped his weapon. The horse stepped on the butt end and the point flew up, penetrated his saddle wallet and entered his abdomen just above the pubes, the weapon breaking off about eighteen inches down. The broken shaft and steel portion was withdrawn from abdomen, and the patient sent in to hospital at once. An hour after the accident his condition was as follows. Shock marked, belly wall rigid and tender, and suffering continuous pain.

On examination a jagged wound, one inch long in vertical direction immediately above the pubes, was seen, and there was around it a large rounded swelling like a hæmatoma. On separating the lips of the wound a knuckle of gut was seen lying bare at the bottom of the wound. A catheter withdrew clear urine. He was taken at once to the theatre. He took chloroform badly, and the rectus was rigid all through the operation. The wound was extended upwards to total extent of nearly four inches.

The rectus had been split by the lance for three inches and the coils of intestine bulged forward under the skin, giving the appearance suggesting hæmatoma before operation.

Two coils of intestine were drawn out from the grasp of the rigid rectus, and two perforations were found each the size of a pea and both pointing mucous membrane.

Both were united with a double row of Lembert sutures, about six sutures to each row being used, making 24 sutures in all. Fine silk was used for this purpose.

The mesentery was bruised and lacerated and one perforation lay on this damaged mesenteric attachment, and the second on the free side. The coils could not be pulled far down, partly it was thought owing to the rigid rectus and partly to the fact that the mesentery was put on the stretch.

The neighbourhood of the coils was flushed with salt solution, no further fecal contamination was found.

The coils were returned and the rectus stitched with silk and then the aponeurosis and skin each separately. No drain was inserted.

The operation lasted just under the hour. For the first 36 hours he did well, then symptoms of general peritonitis came on, and he died just 48 hours after the operation and 50 after the accident.

Post-mortem examination revealed the following condition. The skin wound was healing. The rectus was also firmly united. The two coils were drawn out, and I was surprised to find them perfectly free from peritonitis, and the two operation wounds were on the way toward union and requiring firm traction to separate them.

The wound was extended up and a gush of pus followed, the explanation was this, the lance had punctured the skin, split the rectus, punctured the peritoneum and wounded the intestine. When it was withdrawn, two coils of gut followed through the peritoneal wound forming a traumatic post-parietal hernia, and burrowing for themselves a large sac outside the serous membrane and in the retropubic tissues. The peritoneal cavity and the artificial sac were quite distinct, and the former contained pus and fecal matter derived from a third and larger intestinal wound higher up, which had not been discovered at the operation.

Remarks—In the various books which I have at my disposal I find no reference to this rare complication, nor in a fairly extensive reading and clinical experience do I remember to have met with it. On this account, therefore, I think the case should be put on record. Three factors conspired to prevent the exact state of affairs being recognised. Firstly, because even after a penetrating abdominal wound and even the several coils of intestines had been brought out to view, the peritoneal cavity had not been opened up.

The rigidity of the rectus prevented a full view of the depths of the wound and, thirdly, the collapsed condition of the patient negatived a prolonged search being made for possible complications. The facts of the case point toward the desirability of a free incision and of total evisceration in any case of abdominal injury of doubtful extent.

A UNIQUE PIG STICKING ACCIDENT

By JAMES D GRAHAM,

CAPTAIN, I M S,

4th Bengal Lancers, Allahabad

LIEUTENANT X, who has been under my care, met with the following rather unique accident—

On coming up with the pig, he stuck it by a lunge movement, the pig being ahead of him. The pig then ran across the pony's front, and the spear shaft, striking the pony's off shoulder, was knocked out of the rider's hand. At the same time the weighted end came to ground well forward, the spear was jerked out of the pig, and its point turning in an upward direction, penetrated the near shoulder of the pony, passed through the chest wall, emerging through the nundah at the corner between the flap and seat of the saddle, having passed between the pony's

tenth and eleventh ribs, both of which were partially cut

Force of impact sent it on, and it passed through the left buttock of the rider, emerging behind, and ultimately coming to rest with the blade in a position behind the left axilla and shoulder joint

Only the buttock wound was made, the point of entrance being near the middle of the thigh, 1 (one) inch below the fold of the buttock, the point of exit being 3 (three) inches behind and on a level with left trochanter major, and the distance between being six and-a-half inches

The wound was superficial, missed everything of importance, and is healing well. It was treated with carbolic oil at the time

Only some $1\frac{1}{2}$ inches of shaft were visible between the point of exit from the pony and the entrance buttock wound. The pony stopped dead still, and was held, while the shaft was cut through below the entrance wound. It was then pulled straight through

Nine and-a-quarter inches of blade, and 1 foot $9\frac{1}{2}$ inches of shaft passed through the rider, and 1 foot 9 inches of solid shaft and 3 feet of torn bamboo passed through the pony. The pony developed pneumonia and died one week afterwards, but the *post-mortem* revealed no lung perforation

The case is interesting, I think, first as illustrating the vagaries of a spear in a very few moments, once control over it has been lost by the rider, second, also as showing that such a wound need not become septic if first aid appliances are at hand

APPENDICITIS WITH ABSCESS

By J G MURRAY, M B,

CAPTAIN, I M S,

Nadia

As cases of appendicitis are not frequently reported in the *Indian Medical Gazette* the following may perhaps be of interest. I see it is mentioned by Major Calvert in the October Number, 1901, "that in his experience of mofussil practice cases of appendicitis of so severe a nature or recurring character as to require operation are rarely met with"

The following case, which permitted of little doubt on admission, was subsequently verified by *post-mortem* examination

Asaruddi, aged about 15 or 16, was admitted to hospital on 12th July 1903, with a history of a fall about sixteen days ago. On being questioned, he complained of very severe pain in the "belly," chiefly on the right side

On examination he was found to be very emaciated and looked exceedingly ill. Temperature 100°F , tongue furred and dry, unable to extend the right leg which was kept in a flexed position

Examining the abdomen there was no distension, a firm hard swelling was found in the right iliac fossa, and fluctuation could not be obtained

On the following day he was operated upon, and a large abscess was opened in the right iliac fossa which was shut off from the general peritoneal cavity by adhesions, on this account and because of the patient's general condition no further examination was made, a drainage tube was inserted, dressing applied and the boy sent back to bed. Next morning, the 14th, the temperature was 99° , pulse very fast, and he had passed a good night, the dressings were changed, a good quantity of discharge was present

For the next seven days the patient improved considerably, temperature practically normal, morning and evening, till the 21st, when a decided change for the worse occurred. The temperature rose again, herpes broke out on the lips, and in the chest pneumatic consolidation rapidly developed, first on the left side, then to a slight extent on the right. From the abscess cavity pus still discharged freely, but there were no bad symptoms in the abdomen till 27th July, the day before his death, when signs of peritonitis set in

Post-mortem on 29th, eighteen hours after death. On opening the abdominal cavity purulent peritonitis was found, the coils of intestines being matted together by thick semi-purulent lymph. Round the abscess cavity in the right iliac fossa the coils of intestines showed old adhesions, and, after a little search, the appendix was found towards the posterior part ulcerated and perforated. In the chest the greater part of the left lung was consolidated, also the base of the right lung, and, on opening the pericardium, the heart was covered with semi-purulent lymph

A CASE OF COLLOID CARCINOMA OF THE MESENTERY

By W J WANLESS, M D,

Miraj, Southern Mahratta Country

THE fact that colloid carcinoma of the mesentery at the age of fourteen is of such infrequent occurrence, is the author's excuse for the publication of the following case—

Krishna Tatya, a Mahratta boy of fourteen, was admitted to the Presbyterian Mission Hospital, Miraj, June 4, 1902, complaining of an enlargement of the abdomen

History—Six months ago a nodular swelling appeared in the epigastrium. When first noticed it was the size of a small child's fist and has since increased in size very rapidly

General condition—Previous to the development of the growth the patient had always

enjoyed good health. The patient is pale, anæmic, and his general strength poor, but he can scarcely be called cachectic. The heart is normal, the pulse 100, regular and of fair quality. Examination of the lungs is negative. The tongue is lightly coated, and the bowels are constipated. The urine is high colored, but otherwise normal. The temperature is normal in the evenings, sub normal in the mornings.

Description—The abdomen is generally and moderately distended. There is an ill-defined intra-abdominal swelling occupying the right two-thirds of the epigastric region, and extending into and filling most of the right costo-iliac space. By palpation an indistinct tumour mass is made out with a slightly bosselated feel, and at points an indefinite sense of fluctuation. Percussion over the area referred to is dull, and is tympanitic over the remainder of the abdomen.

Diagnosis—The diagnosis seemed to lie between hydatid cyst of liver, a cyst of the pancreas, and a malignant growth of indefinite origin.

The patient was kept under observation for nine days during which time purgatives were administered at intervals and distension somewhat relieved. Tonics were also administered, and the patient prepared for operation.

June 13, Operation—Three doses of half an ounce each of whisky were given in the morning, and the operation began at 3 P.M. Narcosis, chloroform 3*x*. Time, 40 minutes. Assisted by the house staff, an incision 4 inches in length over the right linea semilunaris, subsequently increased to 6 inches and to within one inch of the costal arch. On incising the peritoneum a doughy tumour presented extending in the direction of the stomach, beneath the liver and transverse colon and into the right flank. The wall of the tumour mass was very thin and friable and readily broke down under the fingers, on handling this discharged large quantities of amber-colored fluid and gelatinous material. Approximately a quart of this fluid escaped which was not preserved. The major part of the growth was composed of colloid material. The growth was multilocular and sprang mainly from the mesentery of the transverse and ascending colon, the free portion of the growth was adherent to the omentum which had to be ligated at half a dozen points in order to reach the base of the growth. The growth was then shelled out piecemeal, leaving most of the thin capsule which was ligated in sections with fine celluloid thread close to the mesentery. The growth contained comparatively few vessels in its wall and trabeculae, and was completely removed without serious loss of blood. The abdominal cavity was freely flushed with several pints of normal salt solution and a couple of pints of the solution, left in the abdomen. To save time the abdominal wound was closed

with through and through sutures of silkworm gut, without drainage. Acetanilide was dusted over the wound, and a bichloride gauze dressing and a binder completed the operation. The patient was put to bed in a condition of severe shock. An enema containing 12 ounces of normal salt solution with an ounce of whisky was given before leaving the operating table, 20 minims of liquor stychnæ were given in two doses during the operation.

Subsequent history—Cardiac stimulants consisting of hypodermic injections of whisky and spirit of camphor were kept up at short intervals during the night, and part of the following day, small doses of morphia and atropia were also administered twice in the first 24 hours to relieve pain and restlessness. The diet consisted of milk and plasmon administered every three hours. The patient reacted to the stimulation, the pulse falling from 130 to 108 within 36 hours. The breathing was observed to have increased in rapidity on the morning of the 3rd day, and on examination dulness was found involving the whole left lung, the patient dying at noon the same day from pneumonia. With the exception of a little pain and considerable restlessness, no abdominal symptoms followed the operation.

The specimen which in addition to the fluid contents which escaped during the operation weighed about two pounds, was unfortunately lost in consequence of the carelessness of a servant.

OLD UNREDUCED POSTERIOR DISLOCATION OF THE BONES OF THE FOREARM. EXCISION OF THE ELBOW JOINT

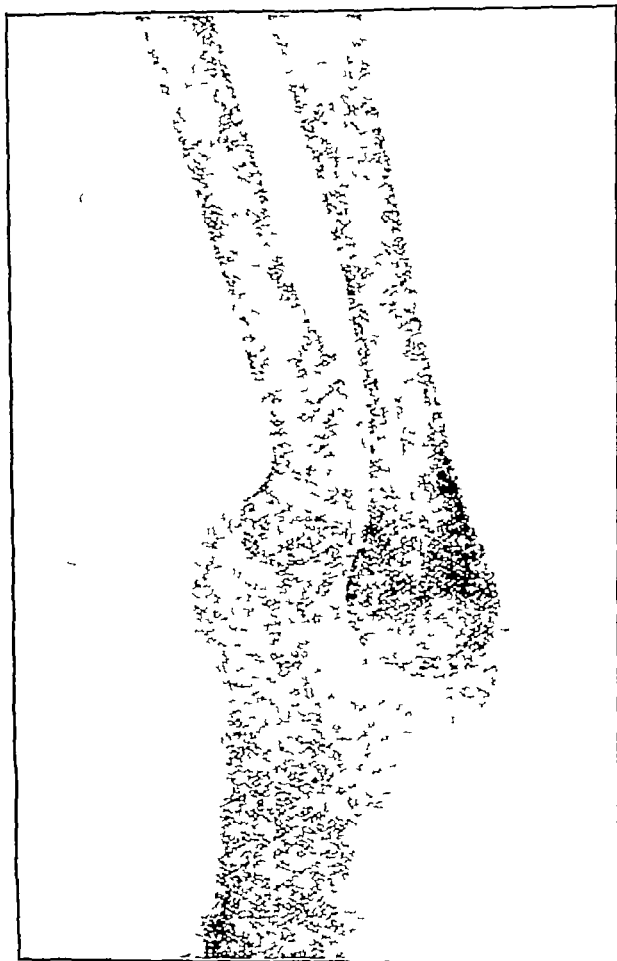
By D. M. MOIR, A.M., M.D.,

MAJOR, I.N.S.

R. L. F., European male, aged 25 years, powerful and muscular, fractured the internal condyle of the right humerus and sustained a backward dislocation of the same forearm on the 3rd February 1902, as the result of a fall upon the elbow while playing tennis. The same day his arm was put up under chloroform at Rangany. Five weeks later the rectangular splint was removed, and the joint was found fixed in a faulty position. At the end of March 1902, he was again anæsthetised, the adhesions were broken down, and violent inflammatory reaction followed.

Early in April 1902, this skiagram was taken with the forearm in pronation, the plate under the elbow and the rays above it. The callus surrounding the internal condyle and the backward dislocation of the bones of the forearm are clearly shown in the skiagram. Between the 9th April and the middle of June 1902, four

attempts at reduction under chloroform were made by different surgeons. On one of these occasions it was stated that the arm was extended to nearly 160° , flexed to 90° , and pronation



and supination rendered almost free. On another occasion some injury must have occurred to the ulnar nerve, because ever afterwards he had numbness in the little finger and in half the ring finger, with pain and tenderness in the region of the ulnar nerve at the elbow.

After each attempt there was severe inflammation, and he suffered great pain about the joint, which always resumed its former faulty fixed position.

The patient consulted me early in December 1902, at which time the forearm was found to be fixed in the attitude of semi-flexion and semi-pronation, the joint was painful, fingers numb, and the posterior dislocation appeared to be even greater than that of the skiagram taken in April. I sent him to the Presidency General Hospital, where I operated on him assisted by Captain H. Meakin, M.S.

Operation on 13th December 1902—It was necessary to make the posterior vertical incision longer than usual. Possibly Hueter's short ulnar incision and long radial incision would have been more appropriate for such a case as this, which was unusually troublesome. Considerable diffi-

culty was experienced in exposing the bones owing to the great depth of the humerus from the extreme backward displacement of the ulna, owing to the amount of callus about the lower end of the humerus, and to the extensive and dense matting together of the muscles and other soft tissues as the result of six attempts at reduction under chloroform. The coronoid process of the ulna showed no sign of fracture, and the fracture of the humerus must have allowed the ulna to go back easily, and then it must have prevented the return of the ulna. Naturally the articular ends of the ulna and radius had to be sawn off before the same could be done to the humerus. The coronoid and olecranon fossæ were obliterated, and there was a quantity of callus about the condyles, the inner of which bore evidence of an extensive fracture which had united. Drainage tubes were inserted into the upper and lower ends of the wound, the edges of which were approximated with silk worm gut sutures.

16th December—First dressing, lower tube removed.

21st December—Second dressing, upper tube removed, incision apparently healed, but sutures left in on account of the passive movements in daily use.

27th December—Wound soundly healed, sutures removed, they had caused no irritation.

The position of the arm was changed every day or two, extension apparatus was found to give him great relief from pain in the early stage, and he was out of bed on the eighth day. Massage and electricity were commenced a fortnight after operation. His temperature ranged from normal to 99°F , except on the second and third nights when it was 100°F .

24th January, 1903—Discharged from hospital. Flexion, extension, supination and pronation were all good, he had a fair amount of power in the limb already, especially in the biceps and brachialis anticus. Of course the biceps was the weakest then, but the arm promised to be quite a useful one. The numbness in the ring and little fingers was nearly gone.

16th August, 1903—Eight months after operation the patient wrote describing his condition as follows—"I can now do most things with my right arm, but I do not give it in shaking hands with anyone, as I get a slight twinge at the elbow, or rather where it used to be. But I can ride and drive about without even getting the slightest pain in it. I can bend my right hand to make it reach nearly the centre of my back, and then I put my left hand behind, and make both hands meet, so you see there is no stiffness in the arm operated on."

Remarks—This case illustrates—(1) The futility of repeated attempts at reduction in an old dislocation of the elbow-joint, which invariably produced violent inflammatory re-

action, and caused terrible pain without any compensating advantage (2) The benefit of using extension apparatus for the first few days after operation (3) The good effect of very early passive movement, succeeded soon by massage, electricity, and active movement of the limb by the patient

A CASE OF ELEPHANTIASIS OF THE SCROTUM OPERATED IN THE CIVIL HOSPITAL, ADEN

By H M MOORE,

CAPTAIN, I M S,

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THE patient was an Arab Sheik, native of Socotia, aged 55 years. General health good.

He was admitted into the Civil Hospital, Aden, on 20th October 1902, with the following history—

About four years previously he felt pain in the right side of the scrotum, after about fifteen days a swelling was noticed, about the size of a betel-nut, corresponding in situation with the seat of pain.

This swelling increased, and when it had attained the size of a mango, it was cauterized with the result that there was free bleeding and discharge of much pus, and the pain and swelling subsided, only, however, to recur soon afterwards, and on both sides. After about two years from the initial onset, and the swelling having become as large as a cocoanut, it was again cauterized with the same results as before, except that the swelling diminished to about half its size only. After about another month, it again began to increase in size, vesicles formed on the surface, discharged a clear watery fluid, dried and again formed. The patient suffered constantly from fever, and there was much discomfort, owing to the pain and to the difficulty in getting about. The swelling continued to increase, and in the end he was induced to seek relief by operation. There was no history of similar disease having occurred to his knowledge in Socotia.

On examination—He was a powerfully-built, well-nourished man, who stated that he had formerly been able to wrestle with, and throw, any four of his countrymen. There was a large oval swelling of the scrotum, extending downwards to about three inches below the prominence of the knees when standing. The penis was invisible, being embedded in the mass of growth. The internal organs were healthy. The blood was not examined.

Operation—21st October 1902

The night before the operation, after the parts had been prepared in the usual manner, the

scrotum was raised by suspending it by means of a cord fastened to a hook in the ceiling, and in this way the venous sinuses were largely emptied of blood, and the circulation through the growth diminished. The actual operation was conducted in the manner described by Lieutenant-Colonel Charles in his excellent article in the *Indian Medical Gazette* for March, 1901.

As a matter of fact, as this was the first case of the kind I had operated on, I was apprehensive of serious arterial hæmorrhage, so used a rubber cord, which was passed round the neck of the scrotum crossed in front, tightened, and fastened off round the iliac crests. It was found, however, that, when the advantage of the tourniquet was most desired, it was useless, as it could not be retained in position, owing to its slipping over the neck of the growth. There was, moreover, no arterial hæmorrhage, which could not be checked by pressure forceps and torsion, and owing to the tumour having been emptied of blood as far as possible (1) by suspension during the previous night, and (2) by tight bandaging from the base upwards, immediately before the operation, there was very little venous hæmorrhage.

A small hydrocele was found in connection with each testicle both were tapped, and a portion of the sac excised from each.

The tumour weighed, when removed, and entirely emptied of blood, a few ounces short of 20 lbs.

The operation was quite successful. The temperature rose to 100°, on the evening of the day of operation, and to 99° on the succeeding evening. There was some slight superficial suppuration from the lower part of the wound, lasting about one week, and the patient was discharged cured, with a useful penis, healthy testicles, and sound scrotum, on the 21st November, or thirty-one days after operation.

I searched through the records of the Aden Civil Hospital, but could find no mention of a case of elephantiasis of the scrotum. This is strange, considering the designation of the disease—"Elephantiasis Arabum."

My sole object in writing these notes, is to corroborate the deductions of Colonel Charles in the following particulars—

(a) The elastic tourniquet is cumbersome, a source of danger, and unnecessary,

(b) the torsion-clamp method of dealing with hæmorrhage is efficient, and in most instances ligature is not required,

(c) the needlessness of drainage,—in this case no drainage of any kind was employed,

(d) the efficacy of the method of bandaging,

(e) the speedy recovery of the patient.

I am indebted, for the notes of this case, to Hospital Assistant Krishnaji Appaji Dharwar-kar, of the Civil Hospital, Aden.

THE
Indian Medical Gazette.

OCTOBER, 1903

TUBERCULOSIS IN CALCUTTA

DURING the past thirty years the deaths from tubercle have more than doubled in Calcutta. This is scarcely to be wondered at when we consider the overcrowding, the bad housing, and the systematic neglect of even elementary sanitation that has been going on all that time in many native quarters of the city. The last *Annual Report of the Health Officer of Calcutta* shows the mortality from tubercular diseases to be 6.4 per cent of the total deaths. Even this figure was only arrived at by all cases of death being inquired into and reported on by the Sanitary Inspectors, most of whom have medical qualifications. Dr Nield Cook is of opinion that this figure is much too low, and he estimates the death-rate from tubercular diseases as at least 10 per cent of the total mortality of Calcutta. In support of this he adduces the statistics of the Medical College Hospital, which show that out of 966 consecutive *post-mortems* 13.4 per cent were due to pulmonary tuberculosis and 3.6 per cent to other forms of tubercular disease. We must also take into consideration the not inconsiderable number of cases of tubercle that are either not diagnosed, or at least are not registered as such. In a city like Calcutta which swarms with every conceivable variety of medical practitioner, qualified and unqualified, and belonging to half a score of systems of medicine, neither the medical skill for exact diagnosis nor the medical ethics come up to a desirable standard. Hence, it comes that many deaths are registered as malarial that are really tubercular, many cases of abdominal tuberculosis are diagnosed and treated throughout in all good faith as cases of chronic dysentery, also many cases of pulmonary phthisis are called asthma simply because they are accompanied with dyspnoea. Such cases come within the experience of every consultant. Dr Nield Cook considers that the disease is spread by direct infection from person to person living together in crowded and ill-ventilated rooms, principally by the germ-laden spray of coughing and sneezing being directly inhaled, and to a less extent

by dried sputum in dust. His remedy is the better housing of the poor. He recommends — (1) careful investigation and recording by sanitary inspectors, (2) periodical disinfection of infected houses, (3) education by leaflets such as those which are now being issued by the Government of Bengal, (4) a home for advanced cases.

Professor Koch has raised quite a storm of controversy over the subject of the transmissibility of bovine tuberculosis to man, which he denies. Arguing from special data in India Dr Nield Cook is also inclined to eliminate tubercle in cattle as a common cause of infection to man. In a paper to the Epidemiological Society of London he states that bovine tuberculosis is a rare disease in India. In proof of this it is urged that only 31 cases of tuberculosis were treated at Belgachia in the Bengal Veterinary College Hospital during the ten years from 1893-94 to 1902-03 out of 4,155 subjects treated. Lieutenant J Farmer, C.V.D., mentions 29 cases of bovine tuberculosis at the Government Cattle Farm, Hissar, Punjab, for the three years 1900 to 1902. Then, again, it is urged that Hindus eat not the flesh of the ox or the cow, yet they are as liable, or more so, than Mohammadans or Christians to tubercular disease. Moreover, the products of the cow, as taken by the natives of India, have usually been sterilised by heat. They boil then milk, they boil their *ghee*, and they very often boil then *channa* in the preparation of sweetmeats. It is further urged that tubercle in India is not so much a disease of child life as of adult life between 20 and 40 years of age, whereas children would more probably have been affected if the infection came from cattle or their milk products.

On the other hand we must not lose sight of the very positive evidence accumulating in Europe of the intercommunicability of human and bovine tuberculosis. Calves have been inoculated by means of human tuberculous sputum injected intra-peritoneally, and primary intestinal infection has occurred in children from tuberculous milk, at least there has been strong reason to attribute the infection to this cause. Though, of course, it is practically impossible to fulfil Koch's second postulate that other sources of infection must be excluded with certainty.

Granting that human and bovine tubercle bacilli are two varieties from a parent stock modified by environment, granting that human tubercu-

losis is a disease of adult life transmitted by sputum, and that bovine tuberculosis produces tubercle in infants and children, or even denying this,—yet we cannot help agreeing with Dr Swan of Philadelphia when he quotes Flick to the effect that “stamping out tuberculosis in the human race and stamping out tuberculosis in domestic animals are undertakings which should run along parallel lines and not at cross-sections. They do not depend one upon the other, nor should they be allowed to interfere one with the other.” If we consider the deplorably insanitary condition of city dairies as kept by natives of India, if we see the sheds badly ventilated and ill-lighted, the bad food and water, the awful filth and confinement in which the cows are kept, for the mere sake of humane treatment and avoidance of cruelty to animals, we should do our utmost in India to introduce clean and wholesome dairies, and in so doing we may indirectly help to reduce tubercle in man and beast. There is one more point we wish to hark back on. It may be the fact that tubercle is comparatively rare in native children, though we can recollect having operated on tubercular dactylitis, on tubercular glands of the neck, axilla and groin, and on tubercular joints of the hip, knee, elbow, wrist and ankle in native children, and adolescents, yet we are convinced we have never seen the same amount of tubercular disease amongst them that we have seen and treated in European hospitals, or that can be found in any city, town or village in Great Britain. In India, especially in Calcutta, we feel sure we have seen far more tubercular disease, both medical and surgical, amongst Eurasian children than amongst native children. The native child is usually suckled at the mother's breast for a couple of years, often for three years, and sometimes for four years. This may lead to pooriness of nutrient material and thus indirectly to phthisis, but it tends to exclude infection from bovine tuberculosis, or at least to explain its rarity. Eurasian children are not suckled so long, yet they are often in the same poor circumstances and surroundings as their native neighbours, and they can obtain only the bazaar milk and bazaar products of their environment.

DISPOSAL OF CITY SEWAGE IN INDIA

THIS is usually a knotty question in the plains of India, and the methods in vogue are in many cases far from perfect. For one thing

the soils and climates of India vary in character so much that a method which may prove suitable to Allahabad or Rawal Pindi may prove an abomination in Calcutta or Dacca. Trenching of night-soil in parts of Eastern Bengal, where sub-soil and surface water are practically one during the rainy season, must always be more or less a melancholy failure, if it does not prove actually and acutely offensive. The same may be said of sewage farms, where the application of crude sewage irrigation to land that is already saturated with moisture must lead to souring of the waterlogged soil without adequate oxidation of the sludge. Then, again, the question of levels and the proper inclination of drains on the plains of India, so as to secure a sufficient current and avoid stagnation, is not always an easy matter or one devoid of considerable outlay.

Disintegration of sewage by aerobic microbes is an object that many sanitarians are seeking to obtain by some method of intermittent filtration. In this way oxidation is attained, and the same filtering material can be used indefinitely. To attain this purpose Mr Dibdin, Chemist to the London County Council, ran the sewage effluent from precipitation tanks into beds of coke, or coarse rubble which admitted of aeration. The result was an odourless non-putrescible liquid. At Lawrence, U.S.A., the Massachusetts State Board of Health tried the same intermittent filtration, with the difference that they used much finer filtering material, which naturally clogged sooner and was less porous for the passage of air.

Other investigators have made use of anaerobic microbes for the disintegration of sewage, and as examples of this may be mentioned the Scott-Moncrieff Cultivation Tank and the Cameron Septic Tank. Mr Scott-Moncrieff ran crude sewage continuously and without aeration into a bed, the surface of which was lined with coarse material. The effluent was then passed through shallow trays of broken coke, and the result was remarkably pure. Mr Cameron, on the other hand, passed crude sewage slowly through an empty tank, where the thick matters were deposited as a sediment, and the effluent was run into coarse beds like those used by Mr Dibdin.

Such are the methods described by Mr Walter Leather in a recent pamphlet of *The Agricultural Ledger*, and he goes on to add —“Thus the

systems of Scott-Moncrieff and Cameron are especially suitable for the purification of sewage, and indeed the outcome of the many experiments of the past few years has been to show that the "Septic Tank" is the best and simplest of all for its preliminary treatment. The only change which has been made in it is the removal of the cover. It has been found in England that a scum rapidly forms on the surface of the sewage in this tank, and that there is practically no need for an artificial cover. Lately, therefore, the "closed septic tank" has given place in part to the "open septic tank."

Mr J W Morrison has been making an interesting series of experiments at Kukee and at Manji to test the manurial value of the effluent from Poona sewage upon sugarcane, lucerne, guinea grass, maize, and various sorghums. The results compared very favourably with others in which heavy dressings of pond-diette, farmyard manure, safflower cake and Niger seed cake were made, and irrigated with canal water. He also agrees in recommending an open septic tank as the best system of purification for India.

It appears certain that a forcing manure, such as sewage effluent is, cannot be applied to crops continuously during the whole period of growth, *eg*, young lucerne seedlings are too delicate newly-planted soft varieties of sugarcane require water frequently during the first few weeks, and again when crops are nearly ripe they do not require this stimulating and forcing manure, except in the case of lucerne and such other fodder crops as are cut green. The experiments which have been made tend to show that the use of intermittent effluent irrigation gives the most profitable results with sugarcane, yams, onions, turmeric, *surans*, sweet potatoes, guinea grass, lucerne, and various sorghums. A good kind of soil for the purpose is said to be a medium black soil from two to three feet in depth, with a substratum of porous *muram*, in order to secure natural drainage.

Before leaving the subject of septic tanks, we should like to draw attention to the enlightened sanitary methods put in force by the private enterprise of some of the mills on the Hugli above and below Calcutta. It may be an enlightened self-interest, for the workers who are best looked after are least likely to leave, and so the mills conducted on the best

sanitary principles have the greatest command of labour. Still it would be a good thing if Government did as much for the employes of State enterprise, such as those at railway workshops, factories, jails, etc. We have seen some mills on the Hugli where septic tanks are in regular use to the great comfort of every one concerned, and much to the benefit of the river. The lines on which further improvements should follow are the substitution of the trough system working automatically at intervals in place of the complicated valve system for each latrine seat, and the use of larger and more numerous settling tanks and filter beds.

POISONING BY ANTIMONY

ANTIMONY, in the form of tartar emetic, is not a poison which figures much in forensic medicine in most parts of the world, and it is Great Britain in particular which has an unenviable record in the criminal use of this drug. We have the cases of Dr Pritchard of Glasgow, and Smithurst the surgeon, murdering their women folk by the insidious use of this poison, then again there is the Bravo case, and those of Cook, McMullan and Winslow, and lastly, the more recent cases of Palmer and Klosowski.

Poisoning by salts of antimony has occasionally been recorded in India, but it is usually spoken of as a rare occurrence in this country. Is this really the fact, and has arsenic such an absolute monopoly for criminal purposes as is generally believed?

Although the classical symptoms of poisoning by antimony are well known, in spite of the fact that very minute amounts of the drug can be detected with certainty in the body long after death, and although antimony has been proved to have a remarkably preservative effect on animal tissues, yet the drug *quâ* poison appears to have certain advantages which appeal to the would-be criminal. Tartar emetic is cheap, easily obtained, and its cautious use in small doses not unfrequently produces symptoms that successfully baffle the diagnostic acumen of the average medical practitioner.

Even arsenic may show a wide variation in the symptoms it produces. Arsenical poisoning has been mistaken for cholera, and the late Surgeon-General R Harvey, FRS, * died

* *Medico Legal Returns of the Bengal Presidency, 1873, p 252, and Trans of the Ind Med Congr, 1894, p 466*

particular attention to the fact that arsenic may occasionally show none of the symptoms of irritation of the gastro intestinal tract, on the contrary that it sometimes appears to expend its force on the nervous system, inducing profound collapse and coma. So likewise the effects of antimony may vary considerably as to the personal equation—I mean the idiosyncrasy as to dosage, they differ according as the poisoning is acute or chronic, and the anomalous grouping of symptoms, the suppression of the more usual signs and accentuation of less common phenomena, have often rendered the diagnosis difficult and obscure, and have brought confusion and discredit on the puzzled medical practitioner, who has even gone so far astray as to certify such cases as deaths from phthisis or debility, or as the consequence of obstruction of the bowels, of dysentery, and of cholera.

Magendie found that dogs, like man, may take a dose of even half an ounce of tartar emetic without a fatal result supervening, *if they are allowed to vomit*, but if the œsophagus be ligatured after the dose is administered, then from 4 to 8 grains may prove lethal in a few hours. Sir Robert Christison* quotes the instance of a scruple of tartar emetic being taken by mistake for cream of tartar, and this was followed by symptoms closely resembling cholera, even to the cramps in the legs. Then again from fifty to a hundred years ago well-known physicians were in the habit of administering with impunity tartar emetic in divided doses which mounted up in the 24 hours to a total of 12, 20, 30, and even 40 grains, with alleged beneficial, or at any rate without harmful, effect. Such massive doses could only have been administered after "tolerance was established", but nevertheless they seem almost impossible amounts nowadays, when the use of tartar emetic has largely fallen into desuetude owing to other drugs having displaced it.

LONDON LETTER

THE ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION

ESPECIAL interest attached to this year's meeting on account of its being the first under the new constitution of the Association. In pre-

paration for it a great deal of business had been transacted by the Council Branches and Divisions. Rules were framed and sanctioned, office-bearers elected, and questions considered. These necessary preliminaries were carried out properly and thoroughly, perhaps in the matter of discussing questions in anticipation of their settlement by the representatives novelty and inexperience were necessarily adverse to sound and searching work, but a good start was made and no doubt the representatives of future annual meetings will be more fully instructed regarding the views of their constituencies on the various matters which are to be brought before the parliament of the Association. On the whole the Swansea Meeting was a success. The arrangements made for the accommodation, comfort, entertainment, and amusement of the visitors were satisfactory, the addresses able and high-toned, the proceedings of the sections lively and interesting, and the general current of the proceedings untroubled. The new constitution emerged from the crucible of trial unsmirched by friction or failure. The general meetings confined their transactions to ceremonial matters, the hearing of addresses, the passing of votes of thanks, and generally to the fulfilment of the functions imposed by the conditions of registration. The representative meeting under the able guidance of Sir Victor Horsley established an excellent precedent. It was smartly got into working order and disposed of quite a number of subjects of prime importance. By means of the medico-political and ethical committees questions concerning the position and practice of the profession, the relations of its members to the public and to each other receive detailed consideration, and the time of the representative meeting is thus economised. Two questions are attracting very prominent notice, namely, contract practice and medical defence. Indian medical practitioners are very familiar with one phase of contract practice which is both convenient and honorable, but the species of contract practice which is so greatly exercising the profession at home is different. It means employment by clubs, the members of which pay ridiculously small fees for the right to command the services of a doctor when they are ill. The system is by no means a bad one, but in the struggle for practice the rate of remuneration inclines to fall, and combined effort is necessary to maintain it at a reasonable

* On Poisons, 2nd Ed., 1832, p. 432.

and decent level. The risks and pitfalls of medical practice are well known and associations already exist by which the burden of the misfortune of one may be shared by many. The point at issue is whether this principle of mutual support should not be further generalized, and whether the British Medical Association may not with advantage constitute a bond of union and cloak of protection to its members in the exercise of their arduous and sometimes hazardous calling.

THE TROPICAL DISEASES SECTION

Notwithstanding the hesitation which at one time existed regarding the expediency of retaining this section as a distinct and separate field of work, the Swansea proceedings were both important and interesting and fully justify the continuance of the arrangement. The attendance was good, the discussions lively and the papers able. Some people, Mr. Johnathan Hutchinson among them, deprecate the too rigid specialization of tropical diseases, and point to the fact that many of them, *e.g.*, plague and leprosy, are not really tropical, while others, as *ben-ben* and *anchylostomiasis* which have a better claim to be so considered and named, have been in recent years met with in temperate latitudes. There is force and truth in this contention, and in these days of rapid transit any tropical disease, say bilharzia infection, black-water fever or sleeping sickness may come under the care of practitioners in England and other non-tropical countries. Still previous to the special study and teaching of tropical diseases very little was known of them even by men purposing to practice in the tropics, and since their separate study was commenced more rapid progress has been made in our knowledge of them than in any other department of medical science. Not only so, but the lessons learnt from such study have had a stimulating influence on research in other fields, and have added important gains to pathology in general. Moreover this added knowledge has been widely diffused, and both medical journals and medical societies find it necessary to include tropical diseases in their pages and proceedings to an unprecedented extent. For these reasons therefore I consider it necessary and wise that, without creating too rigid fences and barriers, these maladies should continue to obtain special attention, special research and special instruction.

VACCINATION AND SMALL-POX

In view of the fact that fresh legislation on vaccination will become necessary next year, the subject constituted a prominent item in the business of the Swansea gathering. The experiences of the recent outbreaks of small-pox in London and elsewhere, enter very opportunely to point the need of increased stringency in infant vaccination and of making compulsory revaccination of adolescents and adults.

There are some profoundly suggestive figures culled from the report of the Metropolitan Asylums Board for 1892.

Of 9,659 small-pox cases admitted during the years 1901-2, 6,945 were vaccinated, the mortality amongst whom was only 7.34 per cent, in 436 cases it was doubtful whether vaccination had been performed, amongst these cases the mortality rate was 39.22, and 2,728 were admittedly unvaccinated, and the mortality amongst them was at the rate of 33.06 per cent.

During the epidemic there were, under ten years of age, only 134 vaccinated cases and two deaths, 33 doubtful cases, of whom six died, and 1,274 unvaccinated cases, of whom 442 died, a percentage of 34.7.

Under twenty years of age, there were 1,297 vaccinated cases, of whom 25 died, a percentage of 1.9, 106 doubtful cases, of whom 21 died, a percentage of 19.8, and 1,893 unvaccinated cases, of whom 592 died, a percentage of 31.27.

The diminution after the age of twenty years in the protective power afforded by infant vaccination is shown by the rise in the death-rate from 4.7 in vaccinated cases between twenty and twenty-five years of age, to 18.07 in cases between thirty-five and forty.

ANTIDIPHTERIC INOCULATION

The same report supplies very striking figures regarding the use of antidiphtheric serum. A few years ago the death-rate from diphtheria in the Board's hospitals was over 30 per cent. Since the introduction of the new treatment it has fallen to 11 per cent. But the efficacy of this treatment depends upon its early application. Judging from figures submitted by Dr. MacCombie, the medical superintendent of the Board's hospital at Shooter's-hill, if the treatment were applied on the first day of the disease a fatal termination would almost invariably be prevented.

Facts of this description ought to be drummed into the ears of the public who are too apt to be influenced by the screeching of fad-dists whose obliquity of vision is only surpassed by their recklessness and mischievousness

RADIO-ACTIVITY

The emanations spontaneously proceeding from the newly discovered elements radium and polonium appear to be likely to occupy a prominent place in the therapeutics of the future. The latest discovery in this field has reference to the action of mineral waters. Professor J J Thomson having shown that radio-active gas was present in the tap-water of the University, research has been made at Bath, and examination of samples from the King's Bath Spring has proved that a radio-active constituent exists in the mineral waters of the ancient city. Mr H S Allen, of the Blythwood Laboratory, Renfrew, reports that "the gas extracted from the water by allowing a current of air to bubble through it, produced a marked increase in the ionisation." But the radio-activity reached a maximum in rather more than an hour, just as Professor Rutherford found to be the case with radium emanations in a closed space.

To obtain full benefit from their use mineral waters must be consumed soon after their emergence, and bottled waters are inoperative unless some process is invented of retaining those hitherto unknown invisible and almost infinite radioactive discharges on which their efficacy is held to depend.

K McL

20th August 1903

Current Topics.

REPORT OF THE MALARIA EXPEDITION TO THE GAMBIA, 1902

THE Liverpool School of Tropical Medicine has just issued a most important and practical report upon the prevention of malaria in the tropics. Dr Dutton, who conducted the expedition with conspicuous success, shows with striking clearness how a great deal of disease is due to the want of knowledge of the nature of malaria, and that during the dry season the residents are largely to blame for the appearance of the disease. It is one of the most hopeful reports ever issued by the school, and it shows that the Governors and others in authority upon the Coast are fully alive to the importance of

stamping out malarial diseases. The report is an immense step forward in preventive medicine.

The object of the Expedition was to investigate the condition under which mosquitoes propagated in the town of Bathurst and at the principal stations of the Colony, and to suggest methods of destroying these insects.

Malaria was found to be prevalent in the colony, 80 per cent of the native children examined harboured malaria parasites in their blood. The liability to infection of the Europeans occurred soon after the rains were established, lasting up to the end of November. The various breeding places of mosquitoes are described in detail in Chapter IV of the Report, particular mention being made of the wells, canoe boats, lighters, cutters on the foreshore, and of the grass-clogged trenches in many of the streets, which together supply Bathurst with the majority of its mosquitoes during the wet season and for part of the dry season. The number of mosquito-breeding places present in the compounds was found to vary with the social position of the occupier. They increased in extent and number in proportion to the wealth and position of the occupier.

An account of the examination of one of the large compounds illustrates to what extent mosquitoes are bred by the white man in the tropics on his own premises.

In one factory yard were found six barrels, and in the garden there were seventeen tubs and eight small wells, all breeding quantities of *Culex*, *Stegomyia* and *Anopheles* mosquitoes. Besides these dry season breeding places, discarded domestic utensils were scattered about the yard and garden, which in the wet season would have acted as breeding places.

It is pointed out that during the dry season from November to May natural breeding places for mosquitoes in Bathurst cease to exist, and from this period the people breed mosquitoes solely in their own compounds.

In Chapter V, which deals with the prevention of malaria in Bathurst, a campaign against the mosquito is advocated, the town is judged especially suitable for its success. Thus Bathurst is situated on a practically isolated piece of land surrounded on nearly all sides by a broad expanse of sea water. The amount of land to be dealt with is comparatively small, viz, about a square mile. The surface is fairly level, sandy, absorbing water readily. In this area the breeding places of mosquitoes are a known quantity, the artificial, or those made by man, being in excess of the natural. The rainfall is very small, and rain occurs only four out of the twelve months of the year.

The probability of the introduction into Bathurst of yellow fever from Senegal is pointed out as another reason for attacking the mosquito.

The expedition was permitted by His Excellency, the Acting Governor, Mr H M Brandford Griffith, on the part of the Colonial

Government, to enter upon a crusade against the mosquito, and on November the 18th the preliminary removal of rubbish from houses and compounds began, a sanitary inspector was appointed and received special instructions in the work. Under him worked a gang of labourers, and at the time of the departure of the expedition, January 10th, 363 houses and compounds had been inspected. From these 131 cart-loads of old tin-pots and other rubbish were removed. On the return of His Excellency the Governor, Sir George C. Denton, the Inspector, and a sufficient staff of labourers were appointed permanently, and a grant of £200 per annum was given for the special anti-mosquito work. Anti-mosquito regulations have been drawn up by the Colonial Government. These are given at the end of the Report.

An appendix by F. V. Theobald, Esq., M.A., is attached to the Report, in it are described the various species of mosquitoes collected by the Expedition, many of which appear to be new.

PESHAWAR MEDICAL SOCIETY

A MEDICAL Society has recently been established at Peshawar for members of the profession belonging to the North-West Frontier Province.

At the opening meeting held on May 25th, the following were elected as officers —

President	Col G. D. Bourke, R.A.M.C.
Treasurer	Lt-Col Geo. Dennis, I.M.S.
Hon. Secretary	Dr. Arthur, Lancaster, C.M.S.
Executive Committee	Major Wimberley, I.M.S.
	Capt L. F. Smith, R.A.M.C.

A paper was read on "Venereal Disease in the Army" by Captain L. F. Smith, in which the questions of treatment and prevention were dealt with in detail.

Major Wimberley shewed a series of microscopical preparations of the Malarial Parasite, and Dr. Lancaster shewed cases of (a) Destructive lupus of nose, and (b) Pythiasis Rubra, and a specimen of Cysto-Sarcoma of Testis of large size.

The second meeting of the Society was held at Peshawar on June 29th, under the chairmanship of Lieutenant-Colonel Kirkpatrick, C.M.G., R.A.M.C.

A paper* by Major MacNab, I.M.S., was read, giving a description of cases of poisoning by the leaves of *Scopolia Lunata*, which had come under his observation during the Black Mountain Expedition of 1891.

A discussion was opened by Captain Smith upon cases of cholera which had occurred among the garrison at Peshawar, other members describing the epidemic which had occurred in the districts of Peshawar and Kohat.

Captain Tate, I.M.S., showed a case of probable malignant tumour of the lumbar vertebrae. Dr. Lancaster showed a calculus which had formed

around the knot of a silk suture which must have fallen into the bladder after a supra-pubic lithotomy, he also described a case of partial talectomy for talipes equino-varus.

THE THERAPEUTICS OF THE PEOPLE.

In the July quarterly issue of *Medical Missions in India* there is ample testimony to the good medical, surgical and obstetrical work being performed in the towns and villages throughout India by this organization. A lady, Dr. J. Muller, writing from Karnal, gives the following vivid description of the procedure which is still unfortunately common —

"Much of the old dread still clings around an operation, though the wonderful powers possessed by chloroform seem to be well known even by those who say they have never seen a European woman before, 'Make us smell the bottle, and then do what you like.' But this is usually after all the old methods have been tried, and then, very often, it is too late for human skill to do anything at all.

The old methods are many and various. Unless Nature acts quickly, either to kill or to cure, there is a certain order which seems almost invariably to be followed. The first is, mostly, to let the trouble alone, to see if it will right itself. The second usually is to call in a man who has the reputation of having power over evil spirits, the evil eye, etc. This treatment is popularly called "sweeping and blowing." For a few coppers certain mumbling incantations are said, while leaves are waved and swept over the part, which finally is blown upon by the operator, strings of the hair of various animals are tied round the ankles, wrists and neck, with many other things, cowries and bits of old iron, which latter are specially believed to possess great power in warding off the evil eye. These failing, a visit is made to the grave of some holy man, where sits another always ready to distribute for a few pice on square inches of duty paper words from the Quran, which are believed to act as a charm in removing disease. These are tied in rags, never too clean, and added to the other strings, etc., round the neck already. Hindus as well as Mahomedans I have seen wearing these charms. Then a hakeem is consulted or a barber, and cupping is advised, which is done with small horns, suction by the mouth being applied through a small hole at the apex. Certainly the "singh-wala," or man with the horns, earns his fee! Then, as often as not blood-letting is performed, and leeches are applied. Finally, just before the dispensary is resorted to, various messes of plasters and poultices are added, that give the patients so much pain and the nurses so much trouble to remove."

THE EARLY HISTORY OF QUARANTINE

ASSISTANT-SURGEON J. M. EAGER has written an elaborate pamphlet on this subject, which

has been published at Washington as a bulletin of the Yellow Fever Institute. He says the earliest form was the land quarantine against leprosy and skin disease, as described in the Pentateuch. Next came quarantine against pest, or plague, and syphilis, whereas quarantine against cholera and yellow fever are comparatively modern in origin. The Crusaders found lazarettoes outside the walls of Jerusalem. Hence the terms Lazaretto and Hospital of St. Lazarus which they introduced into Europe on their return, but in Northern Europe many of the lazarettoes were dedicated to St. George.

The superstitions of stellar conditions, meteors, electrical and other meteorological conditions, the belief in the celestial origin of epidemics, and the efficacy of prayer, fasting and processions in combating them, together with the ignorance of medical men and their bigoted adherence to preconceived notions or to the errors of tradition,—all these combined to prevent men arriving at a rational conception of the subject. The first advances are to be attributed to Eastern works of jurisprudence and to the influence of merchants and travellers. Eastern rulers ordained separation, or isolation, for forty days—as the supposed maximum duration of acute contagious maladies, hence the term quarantine. In the middle ages, when syphilis raged with such violence, the Italians called it the “Morbo Gallico,” while the French returned the compliment by dubbing it the Neapolitan disease. Syphilis is alleged to owe its name to Syphilus, the shepherd hero of a medical poem in Latin written by Girolamo Fracastoro and entitled “Syphilidis sive Morbus Gallicus.”

Maritime quarantine took its origin in the Levantine trade, and is associated with the cities of Venice, Genoa and Marseilles. The Venetians are said to have been the first to provide for maritime sanitation, as far back as the year 1000 A.D., or perhaps earlier, but it was not until 1459 that a public bureau of sanitation was created by the Republic of Venice. In the reign of Queen Anne a strict quarantine act was introduced in 1710, and a quarantine station was established in 1741 in Stangate Creek on the Medway. Next floating hulks were adopted as quarantine stations in England. It was after 1780 that the yellow flag was adopted as a quarantine signal for vessels bound for English ports. Up to the commencement of the nineteenth century British quarantine was of the same cast-iron, unreasoning and red-tape character as continental quarantine, and it is only since then that quarantine restrictions have been relaxed in Great Britain.

INSTRUCTION FOR VACCINATORS AND MIDWIVES

In Saigon the French are establishing a practical school of medicine for natives of Cochinchina.

China. They display practical sagacity in confining their efforts to the training of vaccinators and midwives, leaving the higher medicine and surgery to practitioners trained in Europe. In India we have gone about things in the opposite way. We have all along given natives of India a more or less full curriculum of medical training, whilst our efforts at training vaccinators and midwives in any general and systematic scheme have been and are still beneath contempt.

SODIUM SALICYLATE IN MALARIAL FEVER

To *The Lancet* for the 11th July Mr. Kennard, M.R.C.S., F.R.C.P., contributes a paper on “The Uses of Sodium Salicylate in the Treatment of Malarial Fevers.” Judging from his paper he would seem to have little or no experience of India or of Indian fevers, and he appears genuinely pleased with having learnt the fact that sodium salicylate is useful in fever. So he rushes into print with an account of three cases which he treated on boardship with sodium salicylate and quinine. But he need not have condemned the medical practitioners in India by saying—“I find that this drug (sodium salicylate) is very little used in India for malarial fever, in fact, the practitioners there pin their faith to quinine, and this fact and the success which I have had with sodium salicylate have induced me to bring the subject before the profession.” We know many practitioners in India who regularly use sodium salicylate alone, or in combination with diaphoretic mixtures, to alleviate the symptoms of pain and pyrexia, while they employ quinine at the same time to cure the malarial attack. We may judge of the value of Mr. Kennard's criticism from the following—“As all my cases occurred on boardship I had not the necessary apparatus to confirm my diagnosis by an examination of the blood.” Dr. Kennard's “all” appears to amount to three cases, the diagnosis of which he did not settle, yet he presumes to write on the use of a drug which relieves many pyrexial conditions that are not malarial.

CORSETS

Dr. W. E. Forberrigill has an interesting and practical paper on corsets in the *Medical Press and Circular* for the 8th July. He deals with the anæmia and toxæmia caused by tight-lacing, the rapid improvement following on removal of the corsets and the harm done in pregnancy. He has made measurements of the waists of anæmic young women of the working classes, and he found that the measurements were on an average three inches more without the corset than with it, yet the patients were not conscious of any compression, and believed their clothes were worn loose.

"The 'grown-up' corset is adopted at the age of puberty, when the girl is thin and undeveloped. During the years that follow the chest and the pelvis enlarge, but the waist is not allowed to increase proportionately. Many a big young woman will state with pride that her waist measurement has not increased since she was a girl. It has not had the opportunity of doing so."

The writer states that he is not opposed to the use of corsets in general, and does not endorse the diatribes of dress reformers.

From the view of dress the human body consists of three portions, two of which have bony walls—the chest and pelvis, whereas the intermediate abdomen has soft and yielding walls in front and at the sides. A working man fixes his belt low, and it presses chiefly on the pelvis, the oriental dancer with heavy skirts has the band supporting them resting on the hips below the iliac crests. In both cases the abdomen is free. But the woman of Western civilization "wears heavy skirts whose weight is supported by bands round her waist—that soft portion of the body which is protected by no bony walls." How can this be done? By the corset. "This garment forms a bridge connecting the firm chest wall with the firm pelvis—an artificial completion of the bony wall which nature has left incomplete in the middle portion of the body. The use of the corset is to transmit the pressure of the skirt bands to the hips and ribs, and so to protect from their pressure the organs in the region of the waist. The conclusion is that so long as skirt-bands are fastened round the waist, corsets should be worn. They should be stiffer than usually made if they are effectively to protect the soft middle portion of the body from the pressure of the waist-band. The front should be quite straight, and the waist measurement should be at least as large as the wearer's waist measured over a single soft garment."

THE EDINBURGH INDIAN ASSOCIATION

ABOUT £5,000 are required to provide permanent quarters for this Society, which started twenty years ago. Its object has been to assist natives of India coming to Scotland for study or business, and as a debating club. The Australian and the South African students have long had prosperous clubs in Edinburgh, and a similar institution is required for natives of India. Donations may be sent to Professor Kirkpatrick, University of Edinburgh, who is the honorary treasurer, or to D S Ram Chandra Rao, M.A., President of the Association, or A N T Vizariat, Honorary Secretary, the University House, Edinburgh.

PASTEUR INSTITUTE, VIENNA

SINCE its establishment ten years ago, 1,522 persons have been treated for hydrophobia,

with 20 deaths, or 1½ per cent. In 1901 there were 29 deaths from hydrophobia, only four people of this number had received anti-rabic treatment.

LIBRARY OF THE R A M C

WITH the establishment of an Army Medical College in London, the Netley Library will also be transferred to London. The Secretary of State has sanctioned an increased annual grant to the library, and the appointment of a librarian, preferably a retired R A M C officer, on £100 a year in addition to his retired pay.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS

SIMULTANEOUSLY with the receipt of the sixth number of the twelfth volume of the *Journal of the Association of Military Surgeons* in the United States of America we have to welcome the advent of the first number of the *Journal of the Royal Army Medical Corps*, under the editorship of Major R H Firth, R A M C, who is well known in India. The Director-General, Sir William Taylor, still better known in India in a variety of capacities, writes the introduction. He states that a meeting was held at Netley as far back as 1864 to settle the scope, character and form of a periodical for the medical officers of the Army, "but an old-world opposition, together with 'rules and customs of the service,' effectually killed the proposal at its birth, and though many efforts have been made since then to revive it, they have all been without success." Hitherto the Royal Army Medical Corps have had their *Army Medical Department Report* in which to publish articles specially interesting to their service, but Sir William Taylor tells us that—"Some lethal influence seems to have lurked in the pages of that official publication, for everything that entered them was suffocated at its birth and annihilated. No future existence was possible for anything overtaken by that misfortune." The same result has followed the muzzling edict issued some years ago, which ordained that medical officers in military employ in India should submit any contribution to medical literature for administrative approval and sanction before publication in a medical journal. We are not aware if that order is still in force in India, or if it has been cancelled, but we are sure that it did much to discourage writing on medical subjects amongst both A M S and I M S officers. If still in existence, we hope that this order may be annulled.

The first number of the *Journal of the Royal Army Medical Corps* is issued in a convenient and attractive form. It contains four papers on (1) A Report upon Hospital Arrangements on board Transports, (2) A case of Neurectomy of the Sciatic Nerve, (3) Some rare Ocular

Manifestations of Venereal Disease, (4) Report on the Medical Relief Expeditions to Martinique and St Vincent. The editorial treats of enteric fever, that subject of perennial interest to the British Army. The remainder of the journal consists of extracts from current medical literature, corps news and notices, making in all an issue of 82 pages. The scope of the journal embraces —(1) Original articles written by officers of the Royal Army Medical Corps and others, (2) Bibliographical notes on articles of importance and interest to the military services, (3) Reprints and translations from military, medical and other journals, (4) Official gazettes and official information generally bearing upon the Army Medical Services.

THE June issue of the *Journal of the Military Surgeons* of the United States, already alluded to above, contains half a dozen original communications, the first of which is an address by the well-known Lieutenant-Colonel J. S. Billings on the Military Medical Officer of the Twentieth Century, and the second is by the Hon. E. Root, Secretary for War, in which he describes the opportunities of the Young Medical Officer of the Army. The other papers are on the Ideal Relation for the Medical Department of an Army, Major Operations at the United States Naval Hospital in Brooklyn, New York in 1901, the Education of Medical Officers of the Army, and the Instruction of the Hospital Corps in Companies and Detachments. The second section of this journal contains reprints and translations, the third is a medico-military index of publications, next comes the editorial on the status of the Association of Military Surgeons of the United States at its Twelfth Annual Meeting, followed by the constitution and By-Laws adopted, and other matter amounting in all to 79 pages, and with the half-yearly index to 86 pages.

We have thus fully brought both these journals to the notice of our readers, as they will probably interest that section of them composed of medical officers doing military duty.

THE CLAYTON DISINFECTOR FOR SHIPS

MAJOR JENNINGS, I.M.S., in his Manual of Plague thus describes the Clayton method of disinfecting ships with a view to destroying the rats which usually infest vessels.—A system which was introduced at New Orleans in 1890-91, when Mr. T. A. Clayton was Chairman of the Quarantine Committee, and which consists in driving gas, produced by the combustion of sulphur in a special apparatus, into the lower parts of the holds of ships (made as air-tight as possible), and extracting the air from the upper parts until the whole of the air-space is permeated with the gas to the extent of 10 per cent,

the extracted air being passed over the heated sulphur in the furnace. As the apparatus is worked upon the decks of vessels, or barges adjoining them, there is no risk of fire. One pound of sulphur is used for every 400 cubic feet of space, 3 per cent of the gas in the air being fatal to rats, the expense for fumigating a ship would be at the rate of 20 shillings for every 100 tons gross register.

THE HARVEY MEMORIAL FUND

THE two portraits of the late Surgeon-General R. Harvey, C.B., D.S.O., have been completed, and are much appreciated by those of the late Surgeon-General Harvey's friends who have seen them. The portraits will be shipped from London as soon as the money is forthcoming. All the money at the credit of the fund has been remitted to London, amounting to £198-7-9, which leaves a deficit of about £26-12-3. The subscribers number well under a hundred, though in his lifetime his friends in the Service alone numbered several hundreds. It is to be hoped that members of the Indian Medical Service who have not yet subscribed will come forward to pay up this small deficit.

Review.

Die Krankheiten der warmen Lander, ein Handbuch für Aerzte, von Dr. B. SCHEUBE. 3te umgearbeitete Auflage. Jena: Verlag von GUSTAV FISCHER, 1903. (The Diseases of Tropical Countries: a manual for practitioners, by Dr. B. SCHEUBE. Third Edition, thoroughly revised. Jena: printed by G. FISCHER.) Price, 16 marks.

It may be of service to give briefly the views of the author on those diseases which more nearly concern us here in India.

Cholera—he does not touch upon, as it is, he considers, "a cosmopolitan disease," and is fully dealt with in works on general medicine.

Plague—The author points out that the pneumonic form of this disease was observed during the epidemic which raged in the reign of the Emperor Justinian in the sixth century, and also during that which is known as the Black Death, in the fourteenth century. As to the prophylaxis, he holds that it is the first duty of a previously plague-free State, to isolate any infected area by means of a military cordon. Neighbouring States should keep strict watch on their frontiers and seaports, and prohibit the importation of all goods likely to carry the infection. Towns in the infected country must pay great attention to general sanitation, and make systematic and frequent onslaughts on their rat population. When a town is known to be infected, all "contacts" should be included as a prophylactic measure, compulsory notification of all cases by the families concerned.

should be enforced, with (as a check) house-to-house and corpse inspection, and all plague cases should be removed from their dwellings and these thoroughly disinfected. He lays great stress on early recognition of the disease, and isolation of the first cases, and in this no one will be disposed to disagree with him.

Malaria—The identity of "tropical fever" with "malignant tertian fever" is insisted upon, —a point of which some who have written on the subject have lost sight. For blood examinations at the bedside, he recommends Stephens and Christophers' needle-method of spreading a film, and Manson's stain. Koch's *ipse dixit* that blackwater fever is merely quinine poisoning is rejected by Scheube for seven reasons, which he gives in detail, and which appear to the reviewer to be conclusive.

Bentley's assumption that *kala-azar* is but aggravated Mediterranean fever, finds no favour with the author, who inclines to Rogers' view that it is a malignant type of malaria, but he considers that Rogers' theory of direct infection is not supported by the facts.

Beri-beri—Against the theories that this disease is due to faulty dieting, or bad rice, conclusive reasons are brought forward by Scheube, who appears to think that Manson's theory more nearly approaches the truth. The great uncertainty of the prognosis in cases of beri-beri is well brought out. The treatment recommended consists of change to an uninfected locality, digitalis and other diuretics, stimulants, and electrical treatment of the affected nerves and muscles. The theory that arsenic poisoning is the cause of the disease is rejected on these grounds: (1) arsenic is normally found in the hair and in the tissues of the human body, (2) many of the symptoms observed in cases of arsenic-polyneuritis are absent in cases of beri-beri (pigmentation, erythema with desquamation, hyperkeratosis of the palms and soles, conjunctival injection, and intestinal catarrh, &c), (3) in the many cases in which he has prescribed arsenic, Scheube has never seen an aggravation of the beri-beri symptoms.

Leprosy—Hutchinson's fish-theory finds no more support from Scheube than it does from the profession in India. Regarding the treatment of this disease, the numerous drugs which have been recommended are all enumerated, but nothing better than a temporary improvement is to be hoped for, according to the author.

Dysentery—The author has apparently not had any experience of the saline treatment of this disease, although he describes it fully. He gives calomel in 5 to 7½ grain doses every 4 to 6 hours, and where this has no effect, ipecacuanha in large doses at distant intervals. With his recommendation of milk as an article of diet for cases of acute dysentery, the reviewer is not disposed to agree for he has seen positive harm follow the ingestion of even small quantities of

milk, and now, as a matter of routine, he prescribes myosin-albumen, roast beef, and cornflour or rice congee for his European, Mahomedan and Hindu patients respectively.

Hepatic Abscess—Scheube does not agree with Nelsch and Kiener's sweeping dictum regarding the relationship of liver-abscess and dysentery, although he admits that in many cases the former is a result of the latter. The method of treatment by evacuation with a trocar and cannula is that which he prefers.

From what has gone before, it is evident that Scheube, whose experience as a Professor in the Imperial School of Medicine at Tokio, entitles him to speak with authority, has not confined himself to a statement of his own experience and conclusions. All opinions held regarding each disease are given with laborious exactitude, and at the end of each chapter is an exhaustive bibliography of the disease. As an example on malaria 1,100 titles of works and articles are cited from the literature in the German, French, English, Dutch, Italian, Spanish, Portuguese, Magyar, Polish, Serb and Russian languages!

In addition to the thirteen plates and 64 figures which illustrate the text, there are five useful charts of the distribution throughout the globe of malaria and blackwater fever, beri-beri, leprosy, filariasis, and anchylostomiasis, and a very rare thing in a German work—there is a good index.

Altogether the work is a striking instance of the painstaking way in which our Teutonic cousins set to work to write on subjects of which they have special knowledge, it is a monument of erudition, and evinces fairness to workers of other nationalities. It is easy to understand why it has now attained its third edition, which will be by no means its last. The Second German Edition has recently been translated by Pauline Falcke, whose translation leaves something to be desired, but cannot hide the great merits of the original.

Protozoa and Disease, Part I. By J JACKSON, CLARKE. Baillière, Tindall & Cox. 197 pages. 91 illustrations. Price 7/6.

IN his introduction to this suggestive book, Mr Jackson Clarke takes the line of argument that in a large number of diseases the bacteriological method has, even in the ablest hands, led to no discovery of the causation of the disease, the commonest examples being the ordinary exanthematous fevers. Consequently he concludes that other methods of investigation are necessary, and he thinks that further development is to be found in the study of the protozoa, or unicellular animals, as opposed to the protophyta or unicellular vegetables.

He begins his book by the description of the anatomy of the cell, and of the various forms of cell division, including that of endogenous gemmation, with a reference to phagocytosis, the

cell-inclusions produced by all of which processes have to be distinguished from those of intra-cellular parasites

The rest of the book is largely taken up by a description of the appearances produced by the various classes of the protozoa at different stages of their complicated life history, those species being generally described which have a known or suspected pathogenic significance. As examples of the types described may be mentioned the amœba coli among the Sarcodina, the coccidium oviforme, the malarial parasite, Myxobolus Pfeifferi which has caused widespread destruction of fish in Western Europe, Nosema Bombycis, the cause of the silkworm disease (pebrine), which was checked by the researches of Pasteur, all among the Sporozoa, various trypanosomata (with which the names of Lewis, Evans, and Rogers are particularly associated in India) among the flagellata, and Balantidium Coli among the Ciliata

These examples show that protozoa are capable of producing fever, inflammation, ulceration, and new growth

We look forward with great interest to the publication of the second part of this book in which "it is proposed to collect the work which has been done with regard to the part alleged, but not as yet fully proved, to be played by protozoa in diseases"

To one who remembers the storm of disbelief, not to use a stronger expression, with which Mr Jackson Clarke's opinions as to the significance of "cancer bodies" was received ten years ago, it is evident that he has taken the most assiduous care to make himself conversant with the various appearances presented by the different protozoa at all stages of their changing existence, a knowledge which must be a preliminary to their recognition in human cells and tissues, and in the matter of which he can now have few rivals, one, too, which will give the opinions to be expressed in the second part of the work, a value of the greatest weight and importance

An Atlas of illustrations of Clinical Medicine, Surgery and Pathology Compiled for the New Sydenham Society (a continuation of the "Atlas of Pathology") Fasciculus XV (double Number) or III and IV of the New Series Xanthelasma and Xanthoma with special reference to their association with Functional and Organic Diseases of the Liver. Plates A to M, and XCII to XCVII. London. The New Sydenham Society (Agent, H K Lewis), 1902. Price to non members, one guinea

THE connection of xanthelasma and xanthoma with functional and organic diseases of the liver is of interest not only to the dermatologist, but also to the physician, and this section of the atlas treats very thoroughly of all the varieties of these two diseases and their relation to liver disease

The different varieties are first shortly discussed, and then with the help of a large number of case narratives, which have been collected from many varied sources, the description of each is completed. The histology is also given.

There are fourteen plates in black and white and eight in colours, and these are of a high standard of excellence, the authors in a further fasciculus hope to add to their number

The New Sydenham Society are publishing this "Atlas" by subscription, and point out in their prospectus that if they can obtain a large number of guaranteed subscribers at an early date, they will be able to commence the work on a scale sufficiently large to permit of economical production, we hope that intending subscribers in India will remember this

VACCINATION RETURNS OF THE PROVINCE OF ASSAM FOR THE YEAR 1901-1902.

THE total number of vaccinations amounted to 304,121 in a population of over six millions. Inoculation seems to be preferred in many parts of Assam, and there is no legislation to stop it. This practice of inoculation perpetuates a chronic condition of small pox in the villages. The percentage of successful primary vaccinations was 97.90, and the ratio of population protected was 43.18 per mille. The cost of successful vaccinations varied from one anna in the plains to five annas in the hills.

The Vaccine Depot, Shillong, has been successfully worked by Major E R W Carroll, I M S.

The lymph, made up with equal parts of glycerine and water, used to be of the strength of 50 per cent., but this proved too potent, so it was reduced to 33½ per cent., and later to 25 per cent. This lymph produced less irritation, while its quality was in no way impaired. The Local Government Board Vaccine Institution in London use one part lymph to six parts of mixed glycerine and water but probably this would not stand the heat of India.

Considering the success of lanoline vaccine paste in the Madras Presidency, where it was introduced by Lieutenant-Colonel G King, I M S, and also in Bengal at the present day, it is surprising to learn that the results were very unsatisfactory. So much was this the case that Colonel Carruthers, I M S, states the Assam lanoline lymph will not keep for more than a month or six weeks, and that he does not intend to try any more experiments with lanoline lymph, since the failures make the people dissatisfied and shake their confidence in the efficacy of vaccination.

ANNUAL REPORT OF THE SANITARY COMMISSIONER FOR BENGAL FOR 1902

THE total number of births registered in the province was 2,987,890, giving a ratio of 40.14, and the total number of deaths was 2,488,428, or 33.43 per mille. The increase in births numbered 116,994 but the increase in deaths was greater, viz. 178,004 over the figures of the preceding year. Chittagong proved the healthiest of the divisions, whereas the Presidency Division was the most unhealthy. Noakhali registered the highest birth rate, 53.10 per mille, whilst Hooghly and Calcutta continue at the bottom of the list for birth registration. The year was a bad one for cholera, which accounted for 150,971 deaths.

Small pox has been increasing steadily in severity of late years. In 1899 the total deaths from small pox registered 13,116, they increased to 20,620 during 1900, they rose to 37,630 in 1901, whilst they numbered 57,430 in the year under report.

Such a state of matters does not coincide with the steady increase in vaccinations reported nor with the high ratio of successes recorded. As a matter of fact our vaccination system is carried out by such ignorant, slovenly, untrained men that the so called vaccination scars are not a fit test of success. Only too frequently they indicate dirt and irritation. The use of capillary tubes militates against success however convenient the tubes may be as a vehicle. It would be better to abolish them and to trust to either lanoline vaccine paste or *bona fide* arm to arm vaccination without the storing of lymph in tubes. But with the arm to arm practice it is most necessary that vaccinators should not use the same subject for too many vaccinations, otherwise they succeed only in expressing blood serum not vaccine lymph, and they produce very sore arms in the children whose arms have been too much squeezed, consequently the parents dislike having their children used for this purpose.

Fever was responsible for 1,721,921 deaths during the year. Thus it killed far more people than cholera, plague, small pox

and dysentery combined. The mortality from plague was 32,907, a figure less than half that of the preceding year. There were 56,995 deaths from dysentery and diarrhoea.

ANNUAL REPORT ON THE JAIPUR MEDICAL AND METEOROLOGICAL INSTITUTIONS FOR 1902

THIS report was submitted by Lieutenant-Colonel P. Dural Pank, I.M.S., who along with Major W. H. B. Robinson, I.M.S., acted as Superintendent during the year. The total number of births recorded was 4,714, and the total number of deaths 6,414. About half the total mortality occurred in children under five years of age, and the deaths were particularly numerous in August, September and October. Cholera was epidemic in the southern part of the State for nearly six months between May and October. The State provided quinine for free distribution to the people, which was a great boon in many of the districts in autumn when fevers were prevalent. The vaccinations numbered 81,034. Human vaccine lymph was chiefly used, supplemented from time to time by lymph taken from buffaloes. Vaseline lymph paste was obtained from the Punjab for trial, with disappointing results. The total cost of vaccination was Rs. 6,242-0-9, or 15 pies per case. The total percentage of success for primary vaccination was estimated at 99.83, and 30.43 per mille of the population were successfully vaccinated. In Jaipur city there were four deaths from small pox. In the different medical institutions the out patients numbered 220,728, and there were 4,051 in patients. The medical expenditure amounted to Rs. 68,622, excluding the cost of supervision, vaccination and buildings. At the Mayo Hospital 1,708 operations were performed, of which 738 were major ones.

REPORT FOR 1902 OF THE PRESBYTERIAN MISSION HOSPITAL, MIRAJ

MIRAJ is in the Deccan. There are two native States of Miraj in the Southern Maratha country, one is known as the senior branch and the other as the junior branch. The town of Miraj is in the State of the senior branch near the Kistna river. This annual report shows that good solid medical work is being quietly performed not only in the mission hospital and dispensary, but also in the training of students at the Miraj Medical School, and in the case of lepers at the Miraj Leprosy Asylum.

Plague wrought much havoc in the town and surrounding country from the month of September to the end of the year 1902. This materially interfered with the medical work of the mission, though it gave some excellent opportunities for the exercise of Christian charity. Dr. W. J. Wanless, who frequently contributes to the columns of the *Indian Medical Gazette*, was the senior missionary physician in charge, and he was assisted by Dr. Rutter Williamson and Dr. Carr. The daily average attendance at the outdoor dispensary was 63, the total of out patients numbered 19,802, and 207 minor operations were performed.

The in patients numbered 1,048, with a daily average of 59. The general wards of the hospital are free, but there are also private wards in which the patients pay from Rs. 8 to Rs. 3 per day, and they provide their own food. The surgical operations performed in hospital numbered 1,291. These, together with the dispensary operations, give a total of 1,498 operations for the year. Financially, too, the institution appears to be flourishing.

The medical school is the result of a class started in 1897 with a view to training young men for medical mission work. We are glad to learn that arrangements are under discussion by which something more than a private diploma will be obtainable. Either the students will enter for a Government examination, or a representative committee of medical examiners from different prominent missions in India will be formed. The curriculum includes anatomy, physiology, materia medica and pharmacy, chemistry and physiological chemistry, therapeutics, clinical instruction, biology, histology, pathology, embryology, bacteriology, ophthalmology, hygiene, medical jurisprudence, practice of medicine, principles of surgery, obstetrics, gynecology, dermatology, and a variety of clinical and practical instruction. This comprehensive course occupies four years, and the sessions are held between 1st June and the end of February. The school is closed between 1st March and the end of May, but clinical work is carried on all the more thoroughly during these off months. In the Leprosy Asylum 49 lepers were treated, and they were entirely supported by contributions from the Mission to the Lepers in India and the East. Dr. Wanless and his staff are doing for the Maratha country what the Noyes have been doing so successfully in Kashmir for a number of years.

REPORT ON THE MARITIME TRADE OF BENGAL FOR THE YEAR 1902-1903

THE aggregate foreign sea-borne trade of the Province of Bengal amounted to Rs. 96,62,50,228 and Rs. 41,78,63,199 of this sum is for imports. In addition to this there was the total coasting trade amounting to Rs. 15,06,26,481, of which

Rs. 6,49,03,950 were imports. The total trade under the heading of *Drugs, Medicines, and Chemicals*, had a value of Rs. 45,50,853, making an increase of 3.6 per cent on the previous year. Chemicals reached a value of Rs. 21,81,296, and the chief were bicarbonate of soda, the chemicals used in the manufacture of paper and sulphur. The value of the last is being appreciated more particularly on tea gardens. The value of drugs and medicines amounted to Rs. 23,69,567, showing an advance of 4.5 per cent. Camphor and quinine were the chief items. Imports of quinine rose from 29,958 lbs. to 47,712 lbs., and the bulk of this came from the United Kingdom. The distribution of quinine and cinchona febrifuge from Government gardens was 15,468 lbs., as compared with 13,170 lbs. in the previous year. I fear it is entirely against sound economic doctrines, but still one cannot help wishing that some means could be devised for exempting from customs' duty such articles as chloroform, rectified and methylated spirits, tinctures, and surgical appliances supplied to Government Hospitals, Municipal or District Hospitals, and Hospitals conducted by Medical Missionaries.

The umbrella, so much cherished by the native of Bengal, has been imported to the value of Rs. 3,69,161, or an increase of 29.7 per cent on the previous year. The imports of umbrella fittings have also largely increased. It is reported that a trust has been organised to still further cheapen the price of this article.

ANNUAL STATISTICAL RETURNS AND SHORT NOTES ON VACCINATION IN BENGAL FOR THE YEAR 1902-1903

PROBABLY the most noticeable thing in this report is the fact that there were no less than four Sanitary Commissioners during the year under report, and it is commonly reported that the appointment was offered to as many more officers in other provinces.

The total number of vaccinations performed was 2,781,972, and the average work of a vaccinator was 972 vaccinations. The primary operations numbered 2,592,177, with 98.11 as the ratio of success, and there were 189,795 re-vaccination cases of which 68.07 were successful. The cost of each successful case was 1 anna 2 pies, and the total cost was Rs. 1,99,448.

With calf lymph 214,764 primary vaccinations were performed, with lanoline lymph 399,205, and 1,978,208 by the arm to arm process. The ratio per cent. of success under each of these methods was respectively 98.13, 96.75 and 95.38. Re-vaccinations by the same processes gave a success of 74.04, 62.20 and 67.40 per cent respectively.

In the Calcutta Municipality the vaccinations fell off by over 4,500, and only 2,626 infants were successfully vaccinated out of the estimated 7,976 available for vaccination. This is quite in accordance with the cycles of small pox years in Calcutta.

THE ANNUAL REPORT OF THE SANITARY COMMISSIONER OF THE UNITED PROVINCES OF AGRA AND OUDH FOR 1902

THE report is submitted by Lieutenant-Colonel S. J. Thomson, C.I.E., I.M.S., who spent most of the year on deputation in South Africa in charge of the Bugher Camps in the Transvaal. The sanitary features of the year appear to have been the improved drainage of the larger centres, such as Allahabad, Cawnpore, Lucknow, Benares, Farrukhabad, and Aligarh. Other important drainage projects for Saharanpur, Kosi, Hathras, Haldwani, Deoband and Dehra Dun are under consideration or have been sanctioned.

The consumption of water supply per head varies remarkably in different places from 4 gallons per head at Meerut and Naini Tal, 5 at Lucknow, 7 at Dehra Dun, 9 at Mussoorie, 9½ at Agra, 10 at Allahabad, 13 at Cawnpore, to 15 gallons per head at Benares. In the last named city the construction of latrines, pail depots, surface drains and urinals and branch sewers was continued during the year. The Diddin system of contact filters was in use, except during the rains, and the effluent was invariably satisfactory.

Plague claimed 40,223 victims of whom 22,925 were females. The greater mortality amongst them was probably due to their mode of life which would expose them more constantly to the disease in infected areas. Cawnpore suffered most amongst the towns, having 6,396 deaths. Comparing the seasonal mortality for different diseases, we find that the maximum plague mortality was in March and the minimum in July. Most fever deaths occurred in November, and fewest in July. The greatest number of deaths from cholera and from small pox took place in May, and the lowest number in February from both diseases.

The total number of deaths recorded in the year was 1,552,046, which is a death rate of 32.54. Bengal was higher with 33.4, Bombay had 39.0, and the Punjab 44.1. The infantile mortality was 243.6, amongst other causes this high figure is

ascribed to an extensive epidemic of measles, and to plague and malaria. The infantile mortality for other provinces was—237.4 in the Punjab, 213.3 in Central Provinces, 200.4 in Bengal, 196.3 in Bombay and 168.0 in Madras.

REPORT ON THE SANITARY ADMINISTRATION OF THE PUNJAB AND PROCEEDINGS OF THE SANITARY BOARD FOR THE YEAR 1902

THE birth rates registered in the different provinces of India show the Central Provinces to have 48.49 per mille, the United Provinces of Agra and Oudh 45.84, Punjab 43.8, Bengal 40.14, Assam 34.21, Bombay 34.16, the N. W. Frontier Province 33.6, Burma 31.57, and Madras 28.2 per mille.

The total registered mortality in the Punjab was 886.973, or 44.1 per mille. Bombay came next with 39.04, then Bengal 33.43, the United Provinces of Agra and Oudh 32.54, Assam 29.61, the Central Provinces 25.82, the N. W. Frontier Province 24.4, Burma 21.16, and Madras 20.2. Thus the Punjab had the highest provincial death rate recorded in India, and this was chiefly due to plague. The highest death rates were in Ludhiana 103.9 per mille, 66.7 in Sialkot, 66.6 in Umballa, 54.8 in Jullunder, and 0 in Gurdaspur, and this excessive mortality was due to plague.

This disease was very prevalent during the first five months of the year, and particularly so in March and April, which forms usually the healthiest season of the year. In the Ludhiana district during March and April the appalling death rate of 348 per mille per annum was reached. There were 171,302 deaths from plague in the Punjab during 1902. Of these 95,519 were females, while the males deaths from plague numbered 75,783, i.e., 10.26 per mille for females and 7.02 for males, or 8.52 for both combined, although there was a considerable diminution of deaths from fever in the province taken as a whole, yet it was very prevalent in Hissar, Rohtak, Gujraon, Delhi and Karnal, which are five out of the seven districts in the Delhi division. In the Hissar district there was a violent outbreak of cerebro spinal fever of a very fatal type. The same disease occurred at Delhi in an epidemic form during the first half of the year.

REPORT ON THE WORKING OF THE DISPENSARIES AND JAIL HOSPITALS AND ON VACCINATION IN THE CENTRAL INDIA AGENCY FOR 1901

THIS report is submitted by Lieutenant-Colonel P. A. Weir, I.M.S., the Administrative Medical Officer. It is very brief, consisting of only about three pages with about 35 pages of statistical tables. The Native States dealt with in the report are Indore, Gwalior, Bhagelkhand, Bhopal, Bhopa-war and Bundelkhand. The medical officers who served in the Central India Agency were Lieutenant-Colonels A. H. C. Dane, P. A. Weir, A. M. Crofts and G. H. D. Gimlette, Majors J. R. Roberts, P. J. Lumsden, and W. H. Neilson, and Captains J. Gould, C. M. Moore, W. W. Clemesha and V. G. Drake-Brockman.

There were 107 dispensaries at work during the year, of which 96 belong to Class III A, ten to III B, and one to Class I. In all these dispensaries treated 1,036,056 patients, of whom 16,286 were in door and 1,019,760 out-door cases equivalent to 120.01 per mille of the population. Malarial fevers, ulcers and skin diseases easily head the list, followed at an interval by eye diseases and affections of the digestive system. There was much less cholera, and bowel complaints were also fewer owing to there being less famine. There were 42,356 surgical operations, 741 cataract extractions, 144 operations for vesical calculi, 58 lithotomies and 86 litholapaxies.

The Dhar Dispensary is for women and children only, and is managed by the Canadian Presbyterian Mission. The Leper Asylum at Sehore is maintained at the sole expense of H. H. the Begam of Bhopal.

The vaccinations numbered 160,265, at an average cost of 3 annas 1.81 pies giving 88.74 as the percentage of success in primary operations, and 83.06 for re vaccinations. In Baghelkhand only those cases are counted successful which show three or more good marks.

In Gwalior the relatively large number of re vaccinations is due to the custom of vaccinating very young children in one place only, and re vaccinating them at the age of five or six years. There was no plague in the Central India Agency throughout the year, passengers were examined at the Ratlam and Ujjain stations.

ANNUAL SANITARY REPORT OF THE PROVINCE OF ASSAM FOR THE YEAR 1902.

WE have all heard or read Sir Henry Cotton's views of the down trodden Assam coolie. The opinion of Colonel Cair

Calthrop I.M.S., the Principal Medical Officer and Sanitary Commissioner in Assam, is decidedly antithetic. He does not think that the rates for food grains in Assam have anything to do with the birth rate. "The people of Assam are very well off, food is plentiful everywhere, and life taken so easily that only a minimum of work is done anywhere, the high rates charged for coolies and the disinclination of the people to accept remuneration two or three times as high as in other provinces for what work they do, show that they have plenty to eat and do not want more money, while the comparatively enormous sums they spend on weddings would go to show that marriages and probably the consequent birth rate do not depend upon the *bazaar neetik*. A year's salary is quite a usual amount for a Sylheti clerk to spend on celebrating his daughter's wedding. What does such a person care for the weather or the price of paddy?"

Colonel Cair Calthrop is very severe on the unreliability of the statistics registered for the births and deaths in the province, and he considers "that arguments founded on such basis are useless, a mere waste of time and paper."

It is interesting to learn that the high birth rate of Baipeta (41.24) is ascribed to the fact that Hindu women resort to it as a sacred place, especially favourable for accouchement.

There was a large increase in small pox mortality in the Surma Valley, which was traced to the operations of *Ganaks*, who practise inoculation and thus spread the disease. Apparently inoculation is not illegal according to the law in Assam.

The people will not cultivate trenching grounds, so the practice of incineration is recommended to be extended.

The working of an American fruit-drying machine is very favourably reported on. "The vegetables chiefly used for drying were cabbage, turnips, carrots, beans etc. and it was not found necessary to remove the dried vegetables from the tins in which they were stored for redrying or spreading them in the sun. Four seers of dried vegetables can be turned out after nine hours' work and this quantity is sufficient for the daily consumption of 160 prisoners, and represents 30 seers of fresh vegetables. The machine will therefore provide sufficient dried English vegetables extremely palatable when cooked, and retaining a large portion of the flavour of the fresh vegetables, to supplement and vary, though not replace, the ordinary country vegetables of the pumpkin class during the rains." The method of drying vegetables in vogue in Bengal jails is said not to be a success, possibly it might be advisable to follow the example of the Assam jails in experimenting with this American drying machine because it is a matter of great importance to be able to vary the diet of prisoners at seasons when vegetables are scarce.

EXTRACTS FROM MEDICAL JOURNALS

MEDICINE

In the *Philadelphia Medical Journal* for March there is an article by John M. Swan, M.D., of Philadelphia, giving a review of the recent literature on the intercommunicability of human and bovine tuberculosis. He divides the paper into two classes (I) Those giving proof of the transmissibility of human tuberculosis to animals, (II) Those showing that bovine tuberculosis is transmissible to man.

Rivinal has succeeded in inoculating three calves out of four by the peritoneal route with 10 cc of human tuberculous sputum, the condition being confirmed by *post mortem* examination. In addition to this, he has for some years been on the look out for a case in a child in which there was evidence of infection through the intestinal tract, on the supposition that if a child contracted tuberculosis from drinking tuberculous milk, there should be lesions in the intestine of mesentery. He obtained the lymph glands from a case which Hand considered the clearest case of primary intestinal infection he had ever seen. He isolated from these glands a culture which had the most intense pathogenic power for cattle, killing in from 18 to 27 days.

He concludes that he has either found a human tubercle bacillus having pathogenic power for cattle quite as great as that of any bovine germ, or else that he has found a bovine germ in the mesenteric gland of a child. He believes the latter to be the case. He has obtained similar results with the culture obtained from the mesenteric glands in another child, although the virulence was not so great.

In the opposite direction he has produced a typical tuberculosis in young cattle by large and repeated doses of a human culture of moderate virulence, and that a marked increase in the virulence of such a culture can be produced by successive passages through calves.

De Jong has been able to inoculate the bullock, sheep, dog, goat, and monkey with human tuberculosis.

Areling reports three series of experiments in which he succeeded in infecting the cow, the sheep and the goat with human tubercle bacilli from different sources. These were of course confirmed by *post mortem* examination.

Fibiger and Jensen have published five cases of tubercular enteritis in which the mesenteric lymph glands when injected into calves produced tubercular lesions. Their conclusion is the same as that of Ravenel.

Similar results are reported by Esser and Orth and by Dean and Todd. Evidence is also furnished of the starting of lupus from infection in cutting tuberculous carcasses. Swan goes on to say: "It appears that the writers on these subjects have shown conclusively that human and bovine tuberculosis are intertransmissible, and we can endorse Flick's statements that stamping out tuberculosis in the human race, and stamping out tuberculosis in domestic animals are undertakings which should run along parallel lines and not at cross sections. They do not depend one upon the other nor should they be allowed to interfere one with the other!"

Swan then quotes Koch's postulates which the latter says should be fulfilled in order to prove that tuberculous infection can pass from lower animals to man. They are worth giving in full, and are as follows:—
(1) The cases must furnish certain proof of tubercle in general, and when possible, the primary focus must be supplied, such proof as may be obtained from the existence of unassailable clinical symptoms or, in the absence of these, the evidence of a necropsy.
(2) Other sources of infection must be excluded with certainty.
(3) In each case of alleged infection from milk infected with *perlsucht* the condition of the rest of the people who have taken the same milk should be attended to. In view of the evidence brought forward, few will be disposed to differ from Swan in his conclusion that "It is we think a mistake to adopt extreme measures and opinions concerning the organism causing the disease, while admitting that there are differences in the two varieties of tubercle bacillus, they probably belong to the same parent stock, and have been modified by their habitual environment in man or the lower animals." One can surely add that Koch's second postulate is quite unpracticable and incapable of fulfilment out of the laboratory, and that in face of the circumstantial evidence produced, it would be in the last degree unwise to relax in any way the care now taken to prevent communication of tuberculosis from animals to man by milk or meat.

DIABETES

In the copy of the same journal published on April 4th is an article by Sherman Thompson Brown on moveable right kidney as a cause of diabetes. Dividing diabetes into three types (1) lipogenic or dietetic, which includes the transient glycosuria of stout persons, (2) neurotic, due to injuries or functional disturbances of the nervous system, (3) pancreatic, in which there is a lesion of the pancreas, he goes on to demonstrate the close anatomical connection of the pancreas with the surrounding organs, especially with the right kidney, mobility of which he concludes will produce lesion of the pancreas by dragging upon it. As evidence he cites two cases of diabetes associated with moveable right kidney, cured by nephropexy.

CLAYTON LANE, M.D.

DISEASES OF CHILDREN

The following two cases of foreign bodies in the recta of infants with anal stenosis are described by Dr Alan Mackay in the May number of the *Intercolonial Medical Journal*.

C B, male, *æ*t 2 years, was brought to the Children's Hospital on January 10th, 1903, because his stomach was swollen and painful. His father, who brought him, could give very little information, except that the child had been more or less constipated since birth, and for the last three months had been cross and ailing. The child was not yet weaned, but ate "whatever was going" besides—a very varied dietary, as the sequel showed.

On examination, the child was well grown and well nourished, the abdomen was greatly distended, hyperresonant all over, liver dulness almost abolished, superficial veins distended. The abdominal walls were so tense that even when the child was put deeply under chloroform nothing could be made out by palpation.

On attempting to make a rectal examination, it was found impossible to insert even the tip of the little finger until the anus had been forcibly dilated with a Spencer Wells' forceps. The finger being inserted then, struck against a hard substance. This was removed with a small scoop, and was found to be a glove button, which had been acting like a valve in closing the narrow anus. A collection of beads, cherry stones, plum stones, and pieces of road metal was then removed from the rectum, an enema given, and a very large quantity of normal feces came away. The abdomen now felt quite slack, and was easily palpated.

Three days later, as a large doughy mass could still be felt in the right hypogastrium, the bowel was washed out with the high rectal tube under chloroform. Several pounds of fecal matter were removed, containing plum stones, cherry stones, chaff, egg shell, pieces of straw, and quantities of undigested fruit skins. An incision was made through the sphincter ani, and the anus was thoroughly dilated, and there was no further trouble. The fruit stones had the appearance of having been in the bowel for some weeks, the cherry season was over for at least three weeks. There was not the slightest sign of any irritation or inflammation being caused by these foreign bodies being retained.

Case II—G S, male, 2½ years, came to the Children's Hospital in February 1900, with acute constipation. He was straining and in pain.

On examination, a plum stone was seen to be stuck in the anus. It was then found that the child had been born with an imperforate anus. A small opening had been made in the perineum when the child was two days' old, and fortunately the rectum was thus enabled to do its work, but as the child grew, this small opening was not enough to allow of the escape of fecal matter unless very thin, and the plum stone now completely blocked it.

The anus was dilated, and the plum stone removed, when another came in view, this was also removed and the anus was enlarged by several small radiating incisions.

The child is now five years old, and has had no trouble with the bowels since then.

Some months before getting blocked up with the plum stone, he had vomited some round worms, and a powder containing santonin was given to him, the next day he passed a round worm, about as thick as a slate pencil, and the mother stated that it was stuck for some time in the anus, and she had some difficulty in pulling it through.

These two cases show how a considerable amount of anal stenosis may exist in infancy, without being detected, until some hard lump or foreign body causes more or less complete obstruction. The rectum should always be examined in chronic constipation of infants.

J W F R

Transactions of Medical Societies

THE ASSOCIATION OF MILITARY SURGEONS IN THE U S A

THE EXECUTIVE ELEMENT IN THE TRAINING AND SKILL OF THE ARMY SURGEON

By J N GOLTRA, MA MD

(Continued from page 318)

With a Military General Hospital as now, in the West, and another one or two in the East, it would seem that by short-term assignments to the management of the different departments of these, each Surgeon might be given the opportunity to study the various questions of hospital management and sanitary evolution, and to determine for himself and develop his own resources.

And if pending legislation should ever be enacted, as it probably will be sooner or later, so that the various organisations of State Militia shall become a National Guard in fact as well as in name, then the men and officers of this National Guard who contract disease while in the service of the United States, should be allowed the privileges of these general military hospitals. Medical Officers, also, of the National Guard should be allowed the privileges of instruction in these hospitals on the same terms as other officers of the National Guard are to be allowed the privilege of the various service schools of the United States Army. The advisability of such a measure is shown by the fact that, during the Spanish American War, a considerable per cent of the Medical Officers who entered the service from civil life had been attending some militia organization.

To the possible objection that the measures herein suggested would not be practicable, I answer. Any thing is practicable which will bring about improvement commensurate with its cost. For you and me, that is practical which will make of us the best possible men. And for the Government, that is practicable which will give it a Medical Corps of the highest degree of efficiency, even though the cost be great, which, however, it would not be in this case.

To the objection that few if any would ever put into use such training, I answer. Not all might, but some would be certain to. Warships of every nation have rusted and rotted down without ever going into action, but no Government stops building warships for that reason, and it would be difficult to prove that those not in action have never done any good.

Infinitely more to the purpose is it to train well in all his faculties, the Army Surgeon, for his wisdom, his training, his skill will crystallize into knowledge of better sanitary regulations and better methods, and will become the traditions and habits of a better, because a more effective military organization.

DISCUSSION (ABBREVIATED)

Lieutenant Colonel VALERY HAVARD, U S A — I am certain I heartily favour the education of medical men so far as it is possible, and all classes of medical men. Our regular medical officers already receive a practical training at a special school, and I do not see why this

training should not also be imparted to the civilian doctor or contract surgeon. We know that the great majority of our soldiers are in the hands of civilian doctors and contract surgeons, that the number of medical officers is always too small to answer the demand. Now our soldiers are entitled to the very best medical attendance, to the very best skill of medical officers, and I am afraid that they do not get it, and that a very great injustice is done on that account. As we know, a civilian or contract surgeon may be a very skilled practitioner, he may be a very experienced doctor, but what avail will it be to him if he does not know how to draw a ration, to select a good cook, if he does not know how to prevent disease? I know that in Cuba where I had charge at one time of 25 or more hospitals, I do not believe there were more than three or four in charge of regular medical officers. All the others were in charge of contract surgeons, most of them excellent men, but without this training, with little practical knowledge of their duties as medical officers, — most of them good physicians but in different medical officers, with no idea of their duties as sanitary officers so as to prevent disease and get every thing that was obtainable for their patients.

The PRESIDENT — Major Appel has charge of the Sanatorium at Fort Bayard, a very extensive hospital. Perhaps he would enlighten us as to its administration in the line of discussion of this paper.

Major APPEL — The General Hospital at Fort Bayard was established for the treatment of a special class of diseases. It was an entirely new idea to have a hospital for the treatment of cases of tuberculosis, and the order establishing it said that it shall be conducted according to rules and regulations prescribed by the Secretary of War. Shortly after the hospital was established, the Surgeon General visited it and after inspecting it, noting the administration and organization, I asked him when I would receive the rules and regulations from the Secretary of War, — some six months after it has been established. He informed me that the Secretary of War had delegated him to make the rules and regulations and that he would delegate me. I then asked him for suggestions, and he said, "Go on." Every rule and regulation, therefore, of the hospital was framed by myself, and it being a special institution for the treatment of a special class of cases the conditions are in many respects unique and peculiar, to which the regulations will frequently not apply. Therefore all the regulations are the result of experience in the hospital. Patients there — differing from those in ordinary hospitals — are expected to remain a long period of time. The large majority are not confined to the bed, and they are divided therefore into ambulant cases and bed ridden cases. Most of the ambulant cases are apparently as well able to take care of themselves as anyone in this room. It is necessary in spite of this to have very rigid rules, disciplinary rules, which would not apply in ordinary cases. These rules apply of course to the general hygienic regime. Probably 90 per cent of the cases are not bed ridden, and it was necessary to make rules to compel them to live as prescribed. Of course the principal treatment in our hospital is the out-door treatment. The next important factor is the rest, both physical and mental. Probably in no other military hospital would it be required to make regulations to prevent patients from playing poker. It was necessary also to establish a rule forbidding the smoking of cigarettes, establishing the hours when the patients should retire, rules for the length of time they must remain at the table during each meal, etc. All these questions arose and were met as the result of experience. Of course the most important prohibitory rule is that patients shall not expectorate on the ground or anywhere else except in their paper cups. Outside of the special rules it was necessary to establish at the hospital, all the ordinary regulations of every general hospital would apply, excepting of course that in our hospital we have men who have been discharged from the service, but

being military service men who are entitled to the benefits of the soldiers' home, and being in a military hospital they understand that they must submit to military control, but frequently after committing offences they protest against being punished as soldiers. I have always insisted, however, that they must first suffer such punishment and then they can leave if they desire, but having voluntarily remained in the hospital as patients they must first submit to punishment whether still in the service or not.

The President—The question of administration might be discussed for the great benefit of the Association by Colonel Nielson, who is the administrative medical officer of the Canadian forces. Will Colonel Nielson favour the Association with his views?

Colonel J. L. H. Nielson—I feel honored by being called upon by you to address this meeting. I thank you. I doubt whether anything I could say on the subject would be of very great value to my hearers. Our conditions of service are entirely different from yours. Across the border we have a citizen army. We have hardly any regular soldiers. We have an administrative staff and a few regularly enlisted men forming a regiment called the Royal Canadian Infantry. We have two batteries of field artillery, and two squadrons of cavalry. These form an instructional school for our citizen soldiery. We therefore have not large permanent hospitals, not does it call for much administrative ability in our own medical officers who have charge of the small infirmaries connected with these regular soldiers. But should occasion offer, and during our annual camps of training exercise, we have larger establishments of a very temporary nature. We have small field hospitals, and so on, where our militia surgeons receive their annual training as well as the combatant officers receive their training in artillery, in infantry, and in cavalry. This period of training being short it is necessarily elementary. We, however, endeavour to convey to these militia medical officers a fairly good knowledge of what they would be required to do if embodied in case of emergency. We have for that purpose classes, and the militia surgeons before being confirmed in their commissions are obliged to take a course of instruction in these camps, or sometimes a satisfactory course of training at one of the large military centres. There all these junior officers who have just been appointed gather together and follow a course of seven days. You cannot expect that in so few days they will be very thoroughly grounded in the necessary knowledge of their duties, but they are eye openers of considerable value, and when these courses are repeated every twelve months, after two or three years of attendance our militia surgeons get to have a fairly good idea of what will be required of them were they embodied or mobilized for actual service. In Ottawa next week there will be one of these courses. A number of recently appointed militia medical officers will be gathered there and will follow that course. It consists of nearly ten hours of work a day, practical and theoretical, and at the end of it all is an examination, oral and written, and only after an officer has qualified and has passed with 70 per cent or more of marks will he be confirmed in his commission, and if he fails to pass a first examination he may take a second, but if he fails in that his name will likely be dropped from the militia list. So I do not see that our services are in any way parallel, but I wish simply to emphasize the fact that we are fully aware of the necessity of training for our militia officers in their executive and administrative work.

Captain E. L. Munson, U. S. A.—It seems to me that the remarks of the President of the United States of this morning were particularly fortunate in that respect. He brought out the necessity for special study along professional lines. He emphasized the fact that administrative ability was of special importance. That is a point which we cannot lay before the general public too forcibly or too frequently. The practitioner in civil

life, no matter how good he may be along his special lines of practice, fails as a military surgeon unless he has had special training in the military surgeon's special duty. The doctor in civil life cannot take the place of the army surgeon. He can do subordinate duty in his restricted line of work, but until he has had special training in administrative work, he will fail completely in the handling of large problems, in the performance of the very varied class of business which the army medical officer is necessarily called upon to do.

Lieutenant Colonel N. S. Jarvis, N. Y.—This is a subject that particularly interests me, because since becoming a medical officer of the New York Guard I have been the senior surgeon of what we consider the most important brigade in a body of 15,000 men. We have in my brigade in New York City about 3,500 men, and the medical officers of that brigade have always prided themselves on having obtained an unusual reputation as military doctors, and that reputation has been kept up to this day. Within the last two or three years the legislature has passed some laws and regulations requiring a fairly rigid examination for appointment as medical officers. It consists, first, as to the officer's physical fitness, second, a so called civil service examination, and, third, a professional examination. The latter also includes an examination in military hygiene and general sanitation. Now the great majority of us as students in medical colleges learned nothing of military hygiene—I am certain I never learned anything about it, it was not considered at all. There are very few colleges in this country that teach the subject of military hygiene, so that however competent, however intelligent the doctor may be who is nominated for a commission in a New York regiment, he rarely knows anything about military hygiene, so that if we applied the limitation of 70 per cent in order to receive a commission in a New York regiment we would get no medical officers. Now I have, by virtue of being the senior medical officer, carried out the rule of sending for the young doctor as soon as his name is submitted to the board and informing him that he would be examined fairly rigidly on military hygiene, that we had to comply with the regulations, and in order that he might have plenty of time to prepare himself we would postpone the examination for one or two months if necessary. Of course his commission would be held up during that time, and I have gone so far as to designate works that he should look up, all of which can be obtained in the Academy of Medicine. So by following that routine we have passed quite a number of competent men—at any rate, they have a foundation upon which to work.

Captain A. R. Jarrett, N. Y.—The evident desire to impress upon our minds the necessity of knowing as much about questions of administration as we know about medicine hardly strikes me as the proper thing. It seems to me that the first and primary aim of the medical man is that he should be a medical man, that his knowledge of medicine and surgery should be so far superior to and above his knowledge of administration, that the officer and soldier with whom he comes in contact, and with whom he must treat, will have that confidence which mere knowledge of administration would not inspire, and I have noticed that a great many officers of the line have been very much more impressed with the idea that the medical officer was typically a first-class surgeon or a physician than that he was a man who knew more or paid more attention to the administration of his office. I think the patient will be far more benefited by his knowledge that the officer paid more attention to the treatment of his patient than to the correct signing of a paper or of straightening out some tangle with reference to the drawing of a ration, or the issuing of clothing, or of the disciplining of a man, and would, I think, go a greater way toward helping the patient to recover than if he thought that he had more ability in the line of administration than he had in treating the

patient My attention has been called to that frequently on account of the line officers saying to me that they notice very often that after a doctor comes to be a captain or a major he has a great deal more interest in the paper work or the work of administration than he has in the practice of medicine, and that has been brought to my mind on account of the great stress that has been laid upon the training of an officer chiefly in the administrative part of his work. A great deal of that has been done very faithfully by the hospital stewards, who help out so wonderfully the medical officer, but at the same time, without wanting to dissent for the sake of dissenting, I feel it is a great deal better to think of myself trained more as an able surgeon and medical officer, and have the admiration and respect that I would produce by my ability than to have the soldier feel that I was paying more attention to something that is outside the line he expected me to do.

Major A. H. Briggs, N. Y.—One word only to correct a statement of Colonel Jarvis. I believe he stated that the First Brigade was the only brigade in our State that had an examining board for medical officers. Inasmuch as that remark will be crystallized in our report, I wish to say that the Fourth Brigade of the State of New York had a medical examining board five years before the legislature passed that bill, and every medical officer is rigidly and thoroughly examined as to his qualifications, and has been for several years.

Major Azel Ames, U. S. V.—I hate to have occasion to differ from my very dear comrade [Captain Jarrett] in his conclusions on any matter, but I am not wholly in accord with the expression he has just made. I don't know but that the matter resolves itself a little into the old question that used to be agitated in the debating societies of the country. "Which is the more important, the hen that laid the egg or the hen that hatched it?" I do not know that it has ever been settled, but I do know that both were needed, and I do know, and you all know, that executive capacity and scientific ability must go hand in hand or both fail. The simple fact is that there is no better word or expression in our language than that of applied science. We must have our Sternbergs, our Reeds, our Carrolls, our Bordenes, our Appels, and all others who are hard at work on the scientific features, because those are the basis knowledge, but who is going to apply these things? I remember a very dismal time in an experience in the campaign of the Gulf in 1863. The regiment marched into a field to camp for the night in two inches of water, and the men had to get along the best they could. They had to stay there two or three days. We had some capital surgeons, they embraced good loyal men whose names you would recall. But there was just one man in that outfit who knew enough to drain that field. He had the practical sagacity and the required knowledge to put a lot of men at work to rig up an Egyptian pump and drain that field, and in less than eight hours he had that field dry and was throwing up a trench around it. That is the sort of practical sagacity it seems to me we most need in times of emergency for the welfare of an army quite as much as whether or not this, that or the other bacterium or bacillus or some other unknown cause is at the bottom. You cannot have too much knowledge, that is impossible—just as it is impossible to have an over-production of wealth, you may have over-distribution, but you do not get over-production of wealth. It is true that if you have not the knowledge you cannot apply it, but what is the knowledge worth if you cannot apply it? I have had an experience covering two wars, and I want to express my very cordial appreciation of Dr. Goltra's paper as being along lines of practical development. I remember that our honored President said to me in Porto Rico one day that "In the regular army, especially the medical corps of the regular army, we have a different line of thought, we use a different language to a great extent, have different ideas from our brethren in civil life because our life is so large

ly a matter of regulations, training, and of limitations, while you men who come in from the larger life bring in a freshness and a different range of thoughts which applied to our own oftentimes help both." And that is so I think. The department store idea is not such a bad one after all. There are business elements, there are capacities for great and effective work along the lines of system developed in these great caravanserais of industry that we need, and if we can apply them so much the better for the service and so much the better for humanity.

Correspondence.

AMBULATORY PLAGUE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I should be interested to know from your readers whether it is at all common to find mild fever and slight glandular swellings in persons who have been working amongst plague patients.

In the past few months, I have come across five medical practitioners who stated that after examining many plague patients they experienced tenderness and some swelling of glands, usually axillary. In one case this was accompanied by slight fever but not enough to render it necessary to forego any accustomed professional duties.

A medical man in the Punjab (Dr. H. F. Lechmere Taylor) tells me that up there people freely talk of "thanda phora" "the cold boil," for cases which seem like mild plague, occurring as glandular enlargements without fever, during plague epidemics.

Theoretically there seems no reason why there should not be an ambulatory form of plague, just as there is of typhoid fever or diphtheria.

Have any readers met with post-plague paralyses after such mild cases? What has been their character? Have they been ever found of as severe a character as is so frequently met with after undoubted attacks of plague?

MIRAJ,
BOMBAY PRESIDY

Yours, etc.,
I. RUTTER WILLIAMSON, M.D.

ASCARIS LUMBRICOIDES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The title of Major Castor's article "Ascaris Lumbricoides causing perforation of stomach and intestine and death" seems erroneous. All the evidence adduced by him goes to show that perforation was not caused by the worm.

The fact of the matter is that round worms show a great partiality for passing through perforations in the intestine. I have frequently found them in the abdominal cavity, *post mortem* and at the time of operation, in cases of penetrating wound of the intestine, and also in cases of perforating ulcers. The other day when laying open a huge foetid pelvic abscess a dead round worm escaped in the discharge.

Though round worms are so prevalent, they would seem as a rule to have little pathological significance. I have made *post mortem* on the bodies of apparently the healthiest persons who have died from accidents, and have sometimes counted over a hundred round worms.

Very occasionally I believe, by forming a mass, they give rise to symptoms of acute intestinal obstruction, and I believe that one death in this hospital was thus brought about.

Prolonged recumbency, probably combined with abstinence from food, as in a person suffering from disease associated with anorexia appears to favour the passage of round worms into the stomach, where they may give rise to great irritation. I think some cases of persistent vomiting and collapse and possibly of persistent hiccough are due to this cause.

Yours faithfully,
C. DUER,
Captain, I. M. S.

Service Notes.

THE INDIAN MEDICAL SERVICE DINNER.

THE annual dinner was held at the Café Monaco on the 11th June, and was a most successful function, as we learn from Major W. J. Buchanan, I. M. S. Surgeon General Sir Joseph Fayrer, K. C. S. I., F. R. S., presided in the unavoidable absence of Surgeon General Sir A. DeRenzy, K. C. B. There were no fewer than nine Surgeon Generals present, including two R. A. M. C. guests. There was a muster of fifty-six members of the Indian Medical Service, including 7 Surgeon Generals, 6 Colonels, 22 Lieutenant Colonels, 18 Majors and 8 Captains.

The following is a list of those who were present —
Surgeon Generals G Bainbridge, W W Beatson, Sir J Fayrer, Bart., KCSI, FRS, Sir W R Hooper, KCSI, A Scott Reid, C Sibthorpe, CB, and P W Sutherland.
Colonels G H Banks, W E Cates, H Cayley, OMC, D Hughes, B Williamson, and W S G Wynne.
Lieutenant Colonels M L Bartholomew, G H Bull, A Crombie, CB, H H Dimmock, J Duke, A Duncan, P J Freyer, G S Griffiths, P de H Haug, W H Henderson, E Lawrie, J Lewtas, J B Lyon, CLE, D P MacDonald, D F Mullen, J O'Brien, J Parker, G S Sutherland, W H Thornhill, I F Tuohy, A H Williams, and E W Young.
Majors E H Brown, W J Buchanan, W S Caldwell, P Carr White, B B Grayfoot, A G Hendley, H Hendley, J G Hojel, J Jackson, M A Ker, C H L Meyer, L Rogers, and B J Singh.

Captains H Boulton, S H Burnett, A W F King, W Murphy, J Penny, A E Hayward Pinch, E R Rost, and W B Thurnbull.
 The guests were Sir William S Church, Bart., KCB, President of the Royal College of Physicians of London, Sir James Dick, KCB, RN, Surgeon General Sir William Taylor, KCB, Director General, A M D, Professor T Clifford Allbutt, FRS, Surgeon General T Walsh, A M D, Mr A Willott, President of the Royal Medical and Chirurgical Society, Mr Howard Marsh, Professor R C Leith, Dr Dawson Williams, and Mr Thomas Wakley, jun.

The speech of the evening was made by Surgeon General A Scott Reid, IMS, who refrained from the usual platitudes of the ordinary optimistic post prandial oration. He pointed out that numerous causes of dissatisfaction exist. The amalgamation of the IMS and A.M.S. Military Medical Administration in 1880, diminished seriously the number of IMS administrative appointments, retarded the average length of service for promotion to the administrative grade by at least three years, and thus made it practically impossible for men joining the service when over 25 years of age of ever attaining to administrative rank. Then, again, Medical Officers of the IMS who elected to continue in military employ were entirely out of touch with the Director General of their own service. The present arrangements were very far from popular amongst the executive officers of the IMS. Under the present R.A.M.C. administration the frequent transfers of junior IMS was felt to be a serious evil. For the first year or two in India an IMS officer was liable to as many moves as there are months in year. This was a great source of grumbling. The pay of the junior officer does not err on the score of magnificence, yet he is constantly subjected to expensive moves, and he cannot settle down to work for the examination in vernacular languages. Yet he is debarred from drawing charge pay for any appointment of which he may happen to be doing the work until he is certified to have qualified in the vernacular. Then, again, an IMS officer on landing in India is inexperienced in how to take care of his own health as well as that of others, and he often falls a victim to some serious disease where a more experienced man would have escaped. On every consideration it is expedient that junior IMS officers should be posted to large stations on first arrival, and that they should be kept there for six months to enable them to study and pass in the language tests, and to give them the necessary experience of Indian life and habits which is so necessary for the griffin. Moreover he should be allowed to draw charge allowance for any such work done during the first six months. If he fails in his examination after this period, then the privilege may be withdrawn until he succeeds in passing.

In civil employ too there are causes for discontent. So much is this the case that now it is not an unusual thing to find men reverting to military duty, owing to the disillusionment experienced from IMS civil duty. The action of the Government of India in restricting the fees of medical officers the objectionable manner in which it was done, have been much resented by IMS officers. In order to retain a high standard of medical officer it was necessary to reconsider and to augment the pay of all the ranks, because circumstances have altered so much. The Director General should have the pay and rank of a Lieutenant General and he should be a Secretary to the Government of India in the Medical Department, representing as he does all medical, sanitary and jail matters in the civil administration of India.

He should also be a member of council, and his pay should be increased from that of a more second-class commissioner of a division. Similarly, Inspector Generals of Civil Hospitals should be secretaries to the Local Governments, and members of the provincial councils, and they should not be obliged to submit their proposals to the criticism of secretaries with perhaps only two thirds of their own length of service and with little or none of the requisite special knowledge.

ANOTHER point not dealt with by Surgeon General Scott Reid was mentioned by many of the officers present. This is the grievance that many men actually present at the dinner had been unable to earn the full pension of £700 simply because they were

debarred by the age clause from serving the full period of thirty years, and consequently they had to be content with the 25 years' rate, either the £700 rate should be obtainable at the end of 27 years' service, or there should be some intermediate stage between £500 and £700 for men who have to retire before 30 years' full service.

LIEUTENANT COLONEL P J FREYER, who retired from the Indian Medical Service on account of Government's action regarding the fee question, has made his way since retiring to a foremost place at home as an authority on urinary surgery. He has recently been offered £5,000 to go to South Africa to perform the prostatectomy operation with which his name is associated.

MAJOR HAROLD BROWNE, IMS, has not been idle during his furlough in England. He has taken the M.R.C.P. (Lond.), the F.R.C.S. (Edin.), and the M.D. (Durh.). He has been offered an appointment at the London Tropical School of Medicine.

IN the B.M.J. for the 20th June there is a letter pointing out the need of the medical officer to assist the Inspector General of Recruiting for the British Army. Here is a case of a military officer with no medical knowledge whatever attempting to preside over a technical medical subject like recruiting. He also shows that a permanent medical officer is required for the Chelsea Hospital Invaliding Board. It is extraordinary that there should be no medical officer with special experience on this final invaliding board.

LIEUTENANT COLONEL W L CHESTER, MB, R.A.M.C., to officiate as P.M.O., Rawal Pindi District.

CAPTAIN T H DELANEY, IMS, is allowed three months privilege leave.

THE services of Captain T H Symons, IMS, are placed permanently at the disposal of the Government of Madras.

THE retirements of Lieutenant-Colonels W Owen, M.D., IMS, and J W Clarkson, IMS, both date from March 1903.

CAPTAIN J L MARJORIBANKS, L.M.S., acts as Deputy Sanitary Commissioner, Central Registration District.

CAPTAIN J N WALKER, IMS, to officiate as Superintendent, Central Jail, Agra, vice Major S H Henderson, L.M.S., on leave.

CAPTAIN J C S OXLEY, IMS, is temporarily put at the disposal of the Chief Commissioner, Central Provinces.

CAPTAIN J A BLACK, MB, L.M.S., is appointed a probationer in the Chemical Examiner's Department, and is attached to the Calcutta Laboratory.

THE following Lieutenants of the Indian Medical Service are posted to the Bengal Command — F P Mackie, A I Pridham, J O'Leary, S R Christophers, H Emslie Smith, H R Dutton. To the Punjab Command — J H Murray, A F Pilkington, P G Easton, I C M Young, G A Jolly, H C Brown, A K. Laudie, C L Dunn.

To the Bombay Command — H M Brown, F P Veyra, H H Kiddle, C E Balteel, J L Lunham, G F Humphreys. To the Madras Command — R D Saigol, F C Rodgers, M B Ket, C A F Hingston.

THE following Lieutenants, IMS, have been promoted to Captains — J D Graham, MB, C A Sprawson, M.D., M Mac, kelvie, MB, W Lapsley, MB, W H Cazaly, A F Browne, MB, W V Coppinger, M.D., A Spitteler, MB, J C S Oxley, H R Macnee, L J M Deas, MB, W M Houston, MB, W D A Keyes, M.D., G J G Young, MB, J Good, MB, W G Hamilton, S R Godkin.

RETIREMENTS. Lieutenant-Colonel Z A. Ahmed, M.D., IMS, 28th P.I., and Lieutenant-Colonel S H Dantra, IMS, Civil Surgeon, Mandalay.

LIEUTENANT COLONEL R N CAMPBELL, IMS, goes on three months' privilege leave, and Major J H T Walsh, IMS, acts for him at Dacca, while Captain B H Deare, L.M.S., acts in Murshidabad, and Captain E A R Newman, L.M.S., goes from Shahabad to Rajshahi.

THE services of Captain S Anderson, IMS, Officiating Superintendent of Buxar Central Jail, are replaced at the disposal of the Home Department.

CAPTAIN J W F RAIT, MB, L.M.S., is appointed to act as First Surgeon, Presidency General Hospital, Calcutta, and Captain V E H Lundesay, MB, L.M.S., as Second Surgeon.

CAPTAIN W D HAYWARD, M B, I M S, is appointed to act as Civil Surgeon of Ranchi

CAPTAIN H INNES, I M S, is appointed to act as Civil Surgeon of Bhagalpore

LIEUTENANT J MASSON, I M S, is appointed to act as Deputy Sanitary Commissioner, Northern Bengal Circle

CAPTAIN T HUNTER I M S, to officiate as Civil Surgeon, Farukhabad

CAPTAIN C MILNE, I M S, transferred from Gorakhpur as Civil Surgeon of Sultanpur

THE services of Captain L T R Hutchinson, M D, I M S, are placed permanently at the disposal of the Government of Bombay

THE services of Captains S B Smith and S A Harris, I M S, are replaced at the disposal of H E the Commander in Chief in India

THE services of Lieutenant-Colonel D Wilkie, M B, I M S, are replaced temporarily at the disposal of H E the Commander in Chief in India, and Captain S P James, M B, I M S, is appointed to act for him as Statistical Officer to the Government of India in the Sanitary and Medical Departments

CAPTAIN P F CHAPMAN, I M S, acts as Civil Surgeon, Seoni

CAPTAIN P K CHITALE, I M S, acts as Civil Surgeon, Chindwara

COLONEL C W CARR CALTHROP, I M S, is granted eight months' leave

LIEUTENANT COLONEL O H CHANNER, I M S, is granted six months' leave, and Lieutenant-Colonel A V Anderson, I M S, acts as Sanitary Commissioner for the Government of Bombay in addition to his own duties

CAPTAIN E J O'MEARA, I M S, from Nuttra to be Civil Surgeon at Mirzapur, Major W Vost, I M S, from Jaunpur to be Civil Surgeon of Nuttra

MAJOR A H NOTT I M S, and Captain J M Woolley, I M S, have passed in Bengali by the colloquial test

ARMY BEARER CORPS—BADGE—The Commander in Chief directs that men of the Army Bearer Corps should wear badges, with the letters "A B C" embroidered in green on a white ground, on their sleeves one inch from tip of shoulder, in a similar manner to that laid down in Appendix A to Army Order No 10 of 1902, for other Corps. The belt waistplate to be of brass with a rough grained ground and the clasp with a raised burnished crown on centre piece, similar to that worn by the Army Hospital Corps, but with the words "Army Bearer Corps" in raised burnished letters on the outer circle

ARMY BEARER CORPS—The following instructions should be observed in awarding minor punishments to men of the Army Bearer Corps—

(1) Any of the minor punishments detailed in Army Regulations, India, Volume II, Part B, paragraph 27 (a), (b) and (c), may be awarded by the medical officer in charge of a hospital to a bearer attached to his hospital for duty. Bearers attached for duty to British Corps will, for this purpose, be subject to the Officer Commanding the station hospital, and bearers employed in Supply and Transport godowns, or on station duties, will be subject to the Senior Medical Officer of the Station

(2) The Assistant-Surgeon commanding a company of the Army Bearer Corps is also authorized to award any of the punishments detailed in the paragraph referred to above, to men serving directly under his orders, but the punishment in this case is subject to the approval of the Senior Medical Officer of the Station

(3) Deprivation of good conduct pay or reduction of a sirdar or mate to a lower grade, can only be awarded by the Principal Medical Officer of the District.

(4) In all cases in which punishments are inflicted a report on India Army Form 1027 Medical, will be forwarded to the Company Commander for entry in the Company Defaulter Sheet. It will then be forwarded through the Principal Medical Officer of the District to the Principal Medical Officer of the Command for record

MOCK COURTS MARTIAL

In an article termed "Officers and Civilians," *The Spectator* of the 4th July pithily and practically comments on the Cape Town "ragging case"—"If half a dozen young men lately called to the Bar or admitted to practise medicine had a grudge against a young man not belonging to their own profession, and were to constitute themselves a committee of the Benchers or of the College of

Physicians in order to inflict on him what they considered adequate corporal punishment, the surprise of the public would be too great for words. But where officers are concerned no surprise is felt, and hardly any expressed. Possibly there is a demand for some sort of inquiry, but if the demand is granted, and, as in the recent case leads to nothing, no one is much disturbed. 'Officers will be officers' is a phrase that has come to cover much the same class of delinquencies as 'Boys will be boys'. The subaltern or the junior Captain is assumed to have no more self respect than a boy of sixteen whose physical strength has developed very much more rapidly than his brains. This is not a whit too severe when we consider the beastly exhibition which a number of officers from five good British regiments made of themselves in their attempt to trample on the feelings, and lower the dignity of a fellow creature. The worst of it is that even when on their trial by Court Martial they did not appear to be sensible of their own degradation. Many years ago we remember witnessing two of those silly and childish mock Court Martials carried out by officers of the Royal Artillery on board a troopship. The one was on a quiet and inoffensive officer of the Army Medical Staff who was newly married. His only offence (?) was that he and his wife kept themselves aloof from those hooligans, but he was tried and condemned on a suspicion of having written an anonymous letter of complaint against the prevalent rowdiness on board. It was never proved who wrote the letter, but his punishment caused acute distress to his newly married wife. The other victim was an officer of the Royal Artillery, and his chief crime (?) appeared to be that he was cleverer than the others and more devoted to his profession. One of the charges against him was that he had invented a range finder, and another that he helped to edit the ship's journal on the voyage. In both cases the punishment was 'disgracing and degrading,' to use the words of Lord Roberts when stigmatising another ragging case. It would be well for our national self respect if those holding the King's Commission were made to realise the significance of the terms 'officers and gentlemen,' and to bear themselves as if they really were what they are called by courtesy.

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BOOKS, REPORTS, &c, RECEIVED

Notes on Vaccination in the Punjab, 1902 1903 By Lieut. Col. C. J Bamber, I M S D F H
Notes on the Annual Statements of the Dispensaries and Charitable Institutions of the Punjab, for 1902 By Col J McConaghey, M D I M S
Annual Report of the Sanitary Commissioner Madras 1902
Report on the Administration of the Police of the Lower Provinces Bengal Presidency, for 1902 By R W Carlyle, C I E, I C S
Report on Vaccination in the Madras Presidency for 1902 1903
Administration Report on the Persian Gulf Political Residency and Maskat Political Agency, 1902 1903
Annual Report of the Government Maternity Hospital, Madras, 1902.
89th Annual Report of the Sanitary Commissioner, Madras 1902
Manual of Practical Anatomy, Vol. II, Thorax, Head and Neck Third Edition By Prof D J Cunningham, M.D., F.R.S
Diseases of the Eye By H R Swanzy, A. M., M.B., Eighth Edition

Original Articles.

NOTES ON OPERATIONS FOR ABSCESS OF THE LIVER, ASCITES, AND GALL STONES

BY W J NIBLOCK, M.B.,

CAPTAIN, I.M.S.,

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ABSCESS of the liver is not by any means so frequently met with in Madras as is, I believe, generally supposed. Thus, on looking through the reports of the Madras General Hospital, I find that, during the ten years 1893-1902, inclusive, only 154 cases of hepatic abscess were operated upon—a relatively small number when one takes into consideration the large number of patients who passed through the General Hospital during that time, the *average annual* admission rate for the past three years has been 63,591. Of the 154 cases recorded, 21 were shown as multiple, all of whom died. There were 53 deaths amongst the 133 other cases, several of which were, however, probably multiple, as some of the surgeons who performed the operations made no distinction between single and multiple abscesses in their records. Most, if not all, were operated upon by open incision.

Annexed will be found a table showing the operations for hepatic abscess performed by myself in the General Hospital, together with their ages and other particulars. All the patients were males. It will be noticed that, out of a total of 29 five were multiple, all of whom died. Amongst the remaining 24 there were six deaths, *i.e.*, 25 per cent. All abscesses containing less than 20 ounces of pus at the time of operation recovered.

The notes which follow are chiefly based on the experience of these 29 cases—

Operation—The patient when suspected to be suffering from hepatic abscess is taken to the operation theatre. He is anaesthetized, and all preparations are made for evacuation of the pus, should such be found. The liver is first carefully explored by means of a long exploring needle and syringe. If a distinct prominence be felt or seen, the needle is first introduced at that situation. Where no such prominence exists, the needle is usually introduced into the liver through the ninth or tenth costal interspace. After the liver has been pierced, the piston of the syringe is drawn back for an inch or so leaving a vacuum. Should pus now enter the syringe, the latter is detached leaving the needle sticking in the liver to act as a guide. If no pus be found, the needle is gently pushed upwards inwards and slightly backwards, this being the most likely direction

in which to strike pus. It is gradually withdrawn if no pus is found, and reintroduced in another direction. Five or six different parts of the liver are thus carefully explored before the case is sent back with a negative result. The skin punctures caused by the needle are covered with collodion on cotton-wool.

Should, however, pus be found the needle, as already said, is left in the liver as a guide. Evacuation of the pus is then proceeded with. An incision usually along the ninth or tenth rib is made in, or slightly posterior to, the mid-axillary line, and about two inches of rib excised in the usual manner. The periosteum is then incised, and the liver surface cut down upon and exposed. If adhesions are present, the liver is incised forthwith. If there are no adhesions a strip of gauze is carefully packed all round the proposed line of the incision in the liver.

Nowadays I never use sutures whether the operation be trans-thoracic or not, and have had no bad results through not doing so. The gauze, if carefully inserted all round the opening, will effectually prevent any extravasation into either the pleural or peritoneal cavity, which is more than can be said of stitches in many cases.

With a small scalpel a short incision is then made in the liver capsule. If the abscess be deeply situated, a sinus forceps is then introduced into the liver substance, followed by the index finger. If the abscess be not deeply situated, the finger is at once introduced. As soon as the abscess cavity is reached the needle, which has acted as guide, is removed and the cavity is explored by the finger to note its size, whether loculi exist or not, &c. The finger is then withdrawn, one or two Keith's glass drainage tubes inserted, and the pus allowed to flow away. After evacuation of as much pus as possible the glass drainage tubes are taken out, and a large sized— $\frac{1}{2}$ to $\frac{3}{4}$ inch—drainage tube in the case of a small, or two in the case of a large abscess are then introduced well into the abscess cavity. The drainage tube has two or three large perforations near the end which remains in the cavity, but nowhere else. The outer end of the tube is cut about a quarter inch above the level of the skin, and stitched to the edges of the wound by one stitch. The wound is then dressed in the usual way, a large sheet of protective, or lint, being placed underneath the dressings to prevent irritation of the skin. This has a hole cut in the centre to allow the tube to come through it. The dressings are absorbent and voluminous, with non-absorbent wool outside them.

The cavity is not injected with iodoform emulsion, nor are any lotions used to irrigate it. Recently, however, in a few cases of amoebic abscesses I have washed the cavity out with quinine solution, 1 in 60 to 1 in 80, as recommended by Captain L. Rogers, I.M.S., and

with a beneficial result in the case of small abscesses, the subsequent discharge in some of them at any rate having been decidedly lessened

round the incision is removed in two or three days. The drainage tube is usually removed, cleaned, and replaced about the fifth day or so,

Serial No	Initials	Age	Race	Date of operation	DISCHARGED		Size of abscess	REMARKS
					Result.	Number of days after operation		
1	P P	55	Hindu	25th March 1899	Died	14	58	Multiple abscesses. Had also two other abscesses in liver which burst into cavity of first one after operation. No adhesions present at operation.
2	R	35	"	27th April "	Cured	82		
3	W	38	European	9th May "	Died	42	Large	No adhesions present. This patient had been under treatment in another hospital since 23rd March 1899 for "Typhoid." Death from exhaustion.
4	M	30	Hindu	1st July "	Died	10	58	P M—Abscess completely healed. Multiple abscesses, with one large one. At P M liver found studded with small abscesses.
5	K M	55	"	31st Aug "	Cured	30	Large	Adhesions present. In left lobe apparently.
6	G	35	"	4th Dec "	"	20	10 ozs	Adhesions present. In left lobe apparently.
7	Y	80	"	31st Jan 1900	"	12	Small	In left lobe.
8	M D	43	Eurasian	11th Feb "	Died	2		Multiple. Liver and both lungs studded with small pyæmic abscesses.
9	C	50	Hindu	4th June "	Cured	64	About 40 ozs	Had burst into peritoneum (shut off from general peritoneal cavity by adhesions) and lung. Spitting up hepatic pus on admission.
10	P	65	"	15th July "	Died	10	26 ozs	Multiple. At P M one large cavity, and several small abscesses found in both lobes.
11	D	25	"	20th Aug "	Cured	43	16 "	Had burst into pleura. Shut off from general pleural cavity by adhesions.
12	M G	40	Mussalman	20th Nov "	"	47	40 "	Had burst into pleural cavity.
13	M	35	Hindu	21st Dec "	"	29	Large	No adhesions. On exposing liver a large amount of venous blood was found to be oozing from punctured wound, which ceased when needle was withdrawn.
14	W G C	24	Eurasian	20th Mar 1901	"	19	5 ozs	No adhesions. Entirely intra hepatic. History of tumour of 8 months' duration. Insisted on leaving hospital before sinus had completely healed. Discharge from sinus had practically stopped.
15	A S	28	Mussalman	7th June "	Relieved	42	152 ozs	
16	N	70	Hindu	1st Sept "	Died	3	About 60 ozs	A very weak old man. Intense jaundice.
17	R	40	"	21st Feb 1902	"	10	104 ozs	No adhesions. Death from exhaustion.
18	J G	59	European	27th April "	"	28	Over 60 ozs.	Death from exhaustion. In addition to hepatic pus large pieces of broken-down liver substance came away.
19	M Kn	35	Hindu	6th Nov "	Cured	38	36 ozs	Death from exhaustion.
20	P K. C	40	European	14th " "	"	40	Over 7 ozs	No adhesions. Very deeply seated. Amœbæ in scrapings.
21	Mgn	25	Hindu	17th " "	Died	6	35 ozs	Hæmorrhage into cavity, vide notes. Amœbæ in pus.
22	D	25	"	23rd " "	Cured	36	7 "	Hæmorrhage into cavity, vide notes. Amœbæ in pus.
23	S A	27	"	22nd Feb 1903	"	27	5 "	Hæmorrhage into cavity, vide notes. Amœbæ in pus.
24	G H	42	European	29th April "	"	54	About 30 ozs	Broken down liver substance came away in large chunks. A heavy drinker.
25	A E F	30	Eurasian	30th " "	Died	7		Multiple abscesses. Had shortly before been operated on by another surgeon for hepatic abscess.
26	A C	51	European	2nd May "	Cured	58	6 ozs	No adhesions. Amœbæ in pus.
27	N	45	Hindu	16th " "	"	41	4 "	Had burst into pleura. Very large amœbæ and cocci in large numbers in pus. Shreds of liver tissue came away in the pus. Was apparently moribund when admitted.
28	G	54	"	6th Aug "	Died	6	20 "	
29	V	40	"	21st Sept. "	Remaining	19	Over 40 ozs	Had burst into lung, and was being coughed up in large quantities on admission. Is rapidly recovering.

After treatment—The abscess usually requires dressing twice daily for the first few days, afterwards once daily until the discharge ceases. The gauze packing which has been introduced

being kept in position by a safety-pin. As it is extruded by the contraction of the cavity it is gradually shortened, and is removed as soon as considered safe to do so.

Should the discharge become malodorous the cavity is injected with iodoform emulsion once or twice, this, however, is only likely to occur as a result of careless dressing.

The general treatment resembles that adopted after most abdominal operations. The patient's strength requires to be kept up, and after a short time he is generally given a bitter tonic.

The temperature usually remains normal after the operation. If a rise of temperature occurs after the first few days, it signifies either the presence of another abscess or insufficient drainage, the former requires exploration and evacuation which can sometimes be done through the existing wound, the latter a counter-opening, this is, however, not often necessary when a piece of rib has been excised, and I have never yet had to do it.

Remarks—I consider it of the utmost importance that the exploration should be performed only when the operation for the evacuation of the abscess can be proceeded with forthwith. A case sent over from the Medical Wards a few years ago impressed this very strongly on my mind. He was there explored for abscess and pus found, when he was sent to the theatre for operation. On exposure of the liver by incision, pus was seen to be pouring into the peritoneal cavity through the puncture in the liver. In another case transferred more recently under similar circumstances, but in which adhesions had taken place, the pus was streaming out through the skin puncture.

In case No 13 the needle was introduced and left in the liver, as a guide, in the usual way. On exposing the liver surface venous blood was seen to be oozing freely round the needle, which ceased immediately after withdrawal of the needle.

In another case a patient had been explored and sent to the theatre with diagnosis of hepatic abscess. A needle was there introduced close to the former puncture wounds, but as soon as the peritoneal cavity was entered, blood began to flow through the needle and several ounces came away. An incision was made alongside the needle, and about ten ounces of dark blood were sponged out of the peritoneal cavity. The liver was found to be very congested and with an unusually thin capsule. An irregular rupture about $\frac{3}{4}$ inch in length was found in the latter, which opened immediately into a cavity, the size of a walnut. In this case the oozing was general and did not come from any large vein. The damage done here was apparently due to the needle having been introduced into the liver substance and shoved in different directions without its having been withdrawn first, which should always be done before searching in another direction. If the needle is only partly withdrawn and pushed in various directions one can understand that pieces of the liver may be cut into irregular cones, and the opening in the

capsule also enlarged, thus giving rise to hæmorrhage. In the case referred to no abscess existed.

In case No 21, on the morning of the sixth day after operation the dressings were found to be soaked with blood. On removing them the abscess cavity was found to be filled with blood-clot. He was anesthetized, the blood removed, and the cavity carefully packed with gauze strips, but he died on the same evening. No post-mortem examination was allowed by his relatives.

In three of my cases the abscess was situated in the left lobe, and a distinct prominence could be felt and seen below the costal angle. In these cases incision was made straight down on the tumour. In the case of abscess in the right lobe, however, even where a distinct swelling can be seen below the ribs, it is preferable to open by the trans-thoracic method. In one of my earliest cases I incised parallel with and below the costal arch with the result that when the abscess cavity contracted, the utmost difficulty was experienced in getting, and keeping, the drainage-tubes in. Furthermore, drainage can be carried out much more efficiently by the trans-thoracic route.

Recently in seven cases scrapings from the wall, or pus, were examined carefully under the microscope, and in all of them amœbæ were discovered.

In several of my cases a history of dysentery was obtained, and at post-mortem examination on those who died evidences of dysentery were usually to be seen. In this part of the world one cannot unfortunately place much reliance on histories given by patients, as they are in the vast majority of cases notoriously untrustworthy.

B—Operation for Ascites

I have performed Drummond's operation for ascites due to cirrhosis of the liver five times with one death. A few particulars of the cases are given below—

Initials	Age	Race	Date of Operation	REMARKS
P M	40	E	20-8-00	Transferred from the medical wards where he had been under treatment for several months without any improvement. Had been a heavy drinker. As much as 300oz of fluid used to collect in a week, requiring constant tapings. Operation was considered his only chance, and was accordingly performed. 368 ozs of fluid were removed at operation. The patient made an excellent recovery and is now, I understand, in good health. He showed himself to me a few months ago and looked quite well, without a trace of ascites. Has not been tapped once since the operation. Has turned teetotaler.

Initials	Age	Race	Date of Operation	REMARKS
A M	35	M	21 10 00	Transferred from medical wards History of having been tapped on 3rd October and 332 ozs fluid withdrawn Refilled rapidly, and again tapped on 12th October, when 274 oz were with drawn At operation 336 ozs fluid removed Patient re transferred to medical wards on 29th October, after removal of sutures No refilling took place during his further stay in hospital I heard later that this patient died some weeks afterwards, —cause unknown
K	15	H	5 6 01	Transferred from the medical wards Ascites believed to be due to malarial cirrhosis Spleen not much enlarged Had been tapped on 20th May when 48 oz. of fluid were drawn off Refilled, and again tapped on 25th May when 176 oz. were with drawn. Again re filled At time of operation 141 oz were removed Re transferred to medical wards on 27th July with no appearance of refilling Left hospital later apparently well
V	35	H	24 6 01	Transferred from medical wards Tapped on 19th May 280 oz. withdrawn 22nd May Quantity not stated 2nd June 272 oz. with drawn 10th June 172 oz. with drawn 20th June 218 oz with drawn At time of operation patient was suffering from a large amount of œdema of lower limbs and abdominal wall No albumen in urine Heart sounds normal 298 oz. were removed at the operation Liver very much contracted up underneath the ribs On second evening after the operation his abdomen was reported to be very tense and tender and breathing greatly impeded, and he died on same evening Post-mortem not allowed by relatives
M	30	H	6-6 01	Transferred for medical wards, where he had been frequently tapped, but no records kept of the amount withdrawn At operation 192 oz. fluid removed Made a good recovery, and re-transferred to the medical wards on 27th June No appearance of refilling Left hospital shortly afterwards

It will be seen that only one of the five patients died as an immediate result of the operation Another died some weeks after his discharge, but from some cause unknown. He

was, however, said not to have had any recurrence of the ascites

The remaining cases left hospital apparently well, one of them is well still, the other two (natives) cannot be traced

The fatal case was in a patient with a very small liver, and operation was considered to be his only hope It was not known to me at the time that such cases as this one are not considered suitable for the operation

Operation—This requires no special remarks

A median incision (3—5 inches long) was made in mid line of abdomen between the ensiform cartilage and the umbilicus Fluid evacuated Parietal peritoneum rubbed with gauze, and omentum sutured to it by two rows of catgut sutures thus— the outer row being as far away from the incision as possible, the inner close to the incision In most of the cases a pint of warm normal saline solution was poured in before suturing the abdomen

In only one case was continuous drainage above the pubes carried out I do not think it has got any special advantages, and it leaves a possible loophole for infection of the peritoneal cavity

In one of my cases melæna and hæmatemesis occurred about a fortnight after operation Both were slight, and only lasted for a few days

Remarks—My experience of the operation is too limited for much expression of opinion, but I think that it is decidedly indicated in cases where ascites recurs rapidly after repeated tapping, provided that the liver be not too much cirrhotic and that the heart and kidneys are in good working order The operation is not followed by shock, as a rule, and the patient's condition is immediately improved, whether the improvement is long continued I cannot say, but in one of my cases, the only one traceable, it has continued for over three years

C—GALL-STONES

I have only performed the operation for removal of gall-stones once The patient was a European, aged 60, in a very bad state of health and intensely jaundiced Fifteen stones, varying in size from a grape-seed to a large pea, were removed He recovered well from the operation, but a fistula resulted which still persists, I understand, three years after the operation When operated on he was suspected to be also suffering from malignant disease, which fortunately has proved not to have been correct

Only one other case of gall-stone amongst Europeans in this country is known to me, and Colonel Matland informs me that he has only met with three cases as the result of his long experience

Gall-stone amongst natives of Southern India is practically unknown The only case recorded, so far as I can ascertain, was reported by Major Williams, I M S, in 1895

PRIMARY CARCINOMA OF THE LIVER

BY CAPT E F GORDON TUCKER, I M S,

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and Professor of Pathology, Grant Medical College*

B M, a Hindu beggar, aged about forty-five, was admitted into the Jamsetjee Jeejeebhoy Hospital on the 6th September 1903, complaining of a painful swelling in the hepatic region. Three months before admission he began to feel some uneasiness in the abdomen and speedily noticed a swelling in the part, the swelling rapidly increased until, on admission into the hospital, it had reached the proportions shown in the photograph. On admission he was considerably emaciated, and appeared to be in constant pain. The upper portion of the abdomen was bulged forwards, the protusion being more in evidence to the left of the median line above the umbilicus. The tumour was dull on percussion, and its movements could be seen on respiration beneath the abdominal parietes. The surface was occupied by many large bosses. They were evidently of various sizes, the largest being of the size of a tangerine orange. The organ was slightly tender on palpation. On the right side dulness commenced at the upper border of the sixth rib and extended into the right axilla on the same level. To the left dulness extended outwards to the left nipple line, passed obliquely downwards towards the umbilicus, above which a large and well-marked notch could be easily felt. The tumour felt very hard.

There was no lateral bulging of the right lower ribs. There was no jaundice, and the temperature was normal. The respiratory and cardio-vascular systems were normal. The bowels were very irregular in their action, and enemata were required throughout the case. There was no evidence of splenic enlargement.

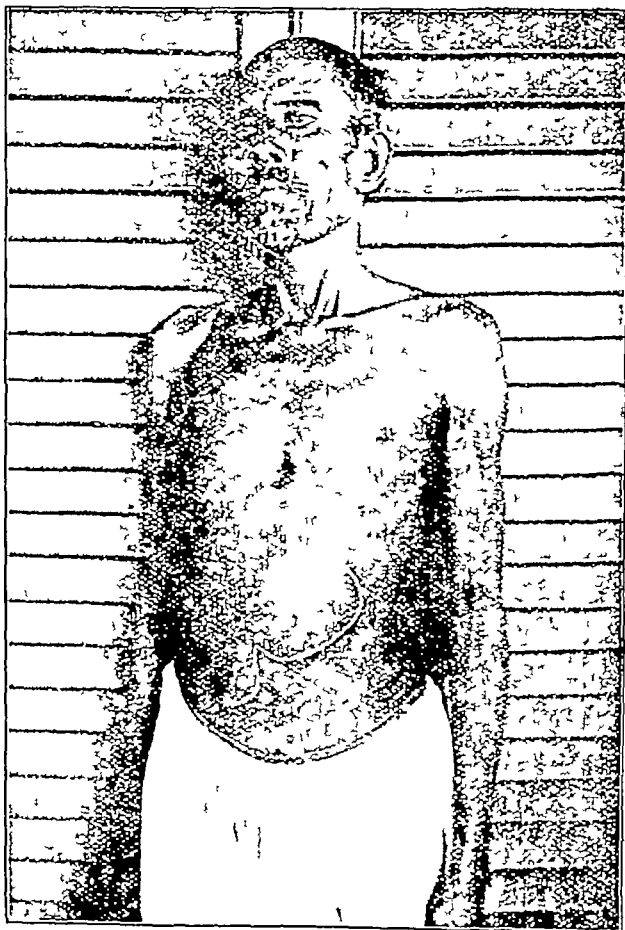
No history of vomiting or hæmoptysis, and the appetite had been fair. He stated that he had lost greatly in weight. No history of alcoholism. Examination of the rectum showed no stricture or growth, and there were no hæmorrhoids. There were no pigmented moles on the surface of the body. As it appeared to me to be possibly a case of melanotic sarcoma of the choroid with secondary deposits in the liver, Major Dyson, I M S, was kind enough to examine the discs, and he reported that there were no signs of sarcoma in the choroid and that the optic discs were normal.

He rapidly emaciated, became weaker day by day, and died from exhaustion seventeen days after admission, that is, three and-a-half months after symptoms had first been noticed.

The *post-mortem* examination was made twenty-two hours after death. Rigor mortis was passing off, and slight decomposition was setting

in. Both pleural cavities contained some blood-stained serum, and there were a few easily broken down adhesions in each, especially around the right upper lobe. There were two old tubercular nodules at the anterior part of the left upper lobe. All the internal organs with the exception of the liver appeared normal, but showed commencing *post-mortem* changes.

The liver was enlarged to nearly four times its normal size. On exposing the organ it was seen to reach right across the upper half of the belly, more space being occupied on the right side than on the left. Its surface was studded with large rounded masses of varying sizes, the largest having the diameter of an ordinary teacup. The surface of this showed injected vessels radiating outwards from the centre. Except for these bosses the surface of the whole organ was smooth and glistening. On the right side the lower margin was slightly adherent to the transverse colon. The diaphragmatic surface was



quite free. When cut into the liver was found to have the whole of its interior converted into a cream-coloured pulaceous mass which in the centre or oldest part was almost diffuent. The white bosses which were apparent on the surface had resulted from this cancerous material approaching the peripheral parts of the organ. Around this cancerous central growth there was a capsule of slightly congested and soft hepatic

tissue about one and a quarter inch thick in the thickest parts. The liver was enlarged as a whole and the shape of the organ completely preserved, the various lobes retaining their sizes relatively one with another. The gall-bladder contained the usual amount of normal bile.

A few lymphatic glands in the mesentery in the neighbourhood of the duodenum were a little enlarged, and on section showed some fairly soft caseous material. The stomach was quite normal.

Remarks—Primary carcinoma of the parenchyma of the liver is rather uncommon. Osler gives a good description of the condition, and divides it into (a) the *massive cancer* which causes a uniform and considerable enlargement of the organ, and in which the greyish soft cancerous material is abruptly marked off from the contiguous normal hepatic tissue. My case was an instance of this variety. (b) *Nodular cancer* in which there is one large hard primary mass, and multitudes of smaller nodules are scattered around it throughout the organ, and having very much the appearance of secondary carcinoma. (c) The form in which there is *cancer with cirrhosis* in which the cancerous elements which are scattered throughout the entire organ appear to induce irritative hyperplasia in the interlobular connective tissue. Lazarus-Barlow describes a fourth form where the growth starts in connection with the portal canals and travels along them.

There are only three specimens of primary cancer of the liver in the Pathological Museum of the Giant Medical College. In one, which was mounted in 1894, which is an instance of the "massive" cancer, the organ was enormously enlarged, weighing 2,660 grammes. Its surface was covered with large nodules, and its substance had a saffron-yellow colour when fresh. In places there are areas of softening putty-like material. The liver was described as practically a mass of cancer, there being but little normal tissue left. The glands in the portal fissure were infected, and had caused pressure on the portal vein. All the lumbar glands were extensively infected, and pressed on the vena cava. There was much fluid in the peritoneal cavity and marked cedema of the lower extremities. Microscopical examination of portions of the growth shows that the cells in the affected parts are large polyhedral cells, with large round deeply-staining nuclei. The masses of cancer are surrounded by dense walls of fibrous tissue. Many cancer cells, scattered and in clusters, are disseminated throughout the fibrous stroma.

The next specimen is a variety of the cirrhotic cancer, and is dated 1896. The liver is studded throughout with cancerous deposits on the surface and in its substance. There is a large soft mass with well-defined edges in the lower part of the right lobe, and another similar mass, the size

of a hen's egg, on the under-surface, adjoining the gall-bladder. This second mass had ulcerated through into the peritoneal cavity. On the under-surface of the liver were found many large blood-clots. This is a very rare complication of cancer of the liver. There were secondary deposits in both lungs. The cancerous collections other than the larger masses are diffused throughout the liver, which is of smaller size than the natural organ, and are surrounded by thickened fibrous stroma. These collections are of half the diameter of a pea or smaller, and give the surface of the liver a nodular appearance, indistinguishable from an ordinary shrinking cirrhosis. The growths are composed of large cells with prominent nuclei, and the cells have an alveolar arrangement. The mesenteric and lumbar glands were normal.

The third specimen is of the nodular variety and is dated 1899. It shows two large masses of primary growth, which produced rounded prominences on the surface, strands of cancerous material can be seen radiating out into the surrounding tissues from the central masses, and there are many smaller nodules of cancer throughout the organ, most of them well marked out under the capsule. The liver weighed 2,660 grammes. The glands of the mesentery were enlarged and were described as caseating. There are several hæmorrhages to be seen in the substance of the organ.

Primary cancer of the liver must be very uncommon in India, and curiously enough, Osler, in his account of this condition, states that it is believed to be very uncommon in the tropics. It is, however, a very acute disease (causing death perhaps in three months), and, like other very rapidly growing malignant neoplasms, may be associated with some febrile disturbance. Seeing that we have to do almost daily with cases of malarial or suppurative hepatitis, the existence of a primary carcinoma, from the point of view of correct diagnosis, is evidently a fact which it is well to keep in mind.

By one of those curious coincidences which are not uncommon in hospital work, I had the other day an opportunity of examining a very similar case to the one which I have described, which was under the care of Major Childe, and, as I performed the *post-mortem* examination, I have obtained Major Childe's permission to make use of the notes.

N. B., a Hindoo driver, aged 55, was admitted into Dr. Childe's wards on September 28th, complaining of great pain in the upper part of the abdomen, and the presence of a tumour in the hepatic region. He stated definitely that pain began in this spot three months before admission, and that two days after this he noticed a small lump in the line of the right nipple just below the ribs. This remained the site of slight pain, but did not increase in size till one month before admission, and since that time he had noted the

appearance of similar nodules to the left of the original lump. On examination the surface of the liver could be seen and felt stretching across the epigastric angle. It was slightly tender on palpation, and the surface hard and distinctly nodulated, but no sign of "cupping." He did not appear to be in great distress nor was he emaciated. The sclerotics were slightly tinged, there was constipation, and there were traces of bile and indican in the urine. There was œdema of both feet, and some enlarged veins on the surface of the abdomen.

Six days after admission he was attacked with great pain in the abdomen, with some abdominal distension, and died in the evening of the same day.

Autopsy—Made seventeen hours after death. The body appeared well nourished. There was a great amount of blood-stained fluid in the peritoneal cavity. Some old fibrous bands were found in the right pleural cavity, and a slight amount of stained serum in the left pleura. The pericardium contained a little straw-coloured fluid. The left lobe of the liver was covered with blood-clot on its inferior and superior surfaces. Œsophagus normal, lungs emphysematous, and œdematous at the bases. The right ventricle was thin-walled, and there were some thickenings on the auricular surface of the mitral valve, and some calcareous patches in the transverse arch of the aorta, and the bases of the semi-lunar valves were thickened. The liver was considerably larger than the normal. It was uniformly nodular on the surface, except for one prominent mass on the upper surface of the left of the right lobe, which on section showed a soft white cheesy material much softer in the centre. Soft saffron-yellow masses occupied the whole of the organ, these were as large as golf-balls in the centre (many showing central hæmorrhages), and of the size of peas in the lateral portions of the liver, and the smaller masses were well marked out by capsules of fibrous tissue. On the superior surface of the left lobe towards the anterior border was a superficial erosion on the surface of one of the cancerous masses, where a blood-vessel had been opened up, producing the large amount of blood found on opening the belly. There was no infection of the glands in the portal fissure or in the mesentery, as there was in my case. The gall-bladder contained a little normal bile.

The renal cortex was white, but the capsule stripped easily. The mucous membrane of the stomach was anæmic, but the organ appeared healthy. The whole of the large and small bowel was searched, and was healthy. The eyes were removed and were normal.

It was a very good example therefore of the nodular variety of primary carcinoma. It ran its course to a fatal termination in much the same time that mine did, namely, in a little more than three months.

AN EPIDEMIC OF CATARRHAL JAUNDICE IN BUXAR CENTRAL JAIL

By S. ANDERSON, M.B., B.Sc.,

CAPTAIN, I.M.S.,

Late Officiating Superintendent

THOUGH cases of jaundice are of common occurrence in Indian jails, yet it is seldom there occurs a series of cases with characters of a type which can only be called "epidemic."

During the period from 12th May to 1st June, 1903, there were in all some sixteen cases, only one of which was fatal. Most of the prisoners attacked were between the ages of 20 and 35, in almost all the onset was gradual, and symptoms calling for treatment were evident to the patient at a period varying from three to seven days after the commencement of the attack.

From a perusal of the annexed statement, it will be noted that many of them had suffered from malarial fever between one and two months previous to the attack of jaundice, and the majority were admitted to hospital after the weekly inspection parade, it was thus ascertained that the period of incubation was six to seven days.

On admission patients complained of fever, often ushered in with chilliness, malaise, giddiness, drowsiness or headache, they then suffered from other accompaniments of fever, such as quick pulse, furied tongue, thirst, and scanty high-coloured urine.

In some pain in the abdomen was present, whilst others had attacks of vomiting, constipation was the rule. The motions at first were hard and clayey, but under treatment quickly became of a yellow colour.

The temperature went up to 100 or 101, a mild fever persisting for eight or ten days. Defervescence was usually gradual, and convalescence was soon established.

The liver was tender but not enlarged, the spleen was not enlarged except in cases previously caused by malarial fever.

The pulse at first quick became slow, the deep yellow staining of the conjunctivæ gradually faded, the urine, previously scanty, increased, and the stools became bile coloured.

The disease is similar to that described by Weil in 1886, and now known as "Weil's Disease."

The statement on the next page shows the incidence of the disease as it occurred.

This type of jaundice does not appear to have any causative relation with employment since the occupation of the affected prisoners, as noted in the same table, was very various.

The diet of all the prisoners in jail was changed on the 25th May by substituting two chittacks of meat for one chittack of dal twice a week, this seems to have had a beneficial effect as there were no more cases after the 1st June.

Of the sixteen cases, six were admitted from ward No 12, and four from ward No 3, this lends colour to the views of some writers who

In fact, no very definite cause could be assigned either as to causation or the manner in which the disease spread, but it should be noted that

Serial No	Prisoner's No	NAME.	Age	Date of Admission to Hospital	Ward No	Occupation	Previous History	REMARKS
1	7657A	Ram Chariter Panday	20	12th May 1903	12 (10)	Wall Guard	Received from Buxar Sub Jail in good health on 2nd October 1902 Admitted for malarial fever on 28th March 1903, and again on 11th April 1903	Recovered
2	7660B	Keolewar Gop	25	16th " "	4 (19)	Water carrier	Received from Bhagalpur in good health on 29th August 1902 Admitted 7th April 1903 for malarial fever	Recovered
3	7037B	Balgobind Rai	25	16th " "	12 (12)	Cook	Received from Chapra Jail on 21st April 1903 in good health Admitted for malarial fever on 18th March 1903	Recovered
4	7725A.	Chotto Miah	38	16th " "	3 (16)	Lamp lighter	Received from Chapra Jail on 23rd October 1902 in good health Admitted for malarial fever 12th April 1903	Recovered
5	7446B	Khair Bux	40	17th June "	3 (15)	Newar making	Received from Bhagalpur on 17th August 1902 in good health Admitted for malarial fever on 25th March 1903 and on 8th April 1903	Recovered
6	8222A.	Bhabotosh Pramanik	24	23rd May "	12 (12)	Barber	Received from Bankura on 7th April 1903 in good health No previous admission	Died from meningitis.
7	7634A	Matabar Hazari	34	23rd " "	4 (18)	Wheat grinding	Received from Durbhunga in good health on 24th September 1902 Admitted for diarrhoea, 6th October 1902 Admitted for malarial fever on 28th April 1903	Recovered
8	8130B	Bhulatan Teli	24	24th " "	40 (cells)	Dye shop	Received from Daltonganj in bad health due to enlargement of spleen. Diarrhoea, 31st March 1903	Recovered.
9	8131B	Sukhari Garin	45	25th " "	24	Lifting water	Received from Daltonganj in bad health with enlarged spleen	Was several times in hospital and has been almost always in the convalescent gang
10	6669B	Budhan Ahir	30	26th " "	12 (4)	Tent-shop	Received in good health	Recovered
11	6984A	Sukhi Barhi	20	31st " "	4 (22)	Car enter	Received from Arrah Jail in good health on 30th March 1902	Recovered
12	7452B	Gopal Kalwar	28	31st " "	12 (8)	Convalescent Gang	Received from Bhagalpur in good health on 17th August 1902	Four previous admissions for malarial fever Recovered
13	8185B	Mahomed Ali	30	31st " "	12 (12)	Lifting water	Received from Bhagalpur in good health.	Two previous admissions for malarial fever Recovered
14	8121B	Lakhan Bind	35	31st " "	4 (22)	Mason	Received from Arrah Jail in good health	Recovered
15	7162B	Khoda Bux	40	31st " "	3 (15)	Newar making	Received in good health, under observation since 24th May 1903	Recovered
16	7469B	Jherie Jurgha	36	1st June "	3 (14)	Dye shop	Received from Bhagalpur in good health on 24th August 1902 Admitted for malarial fever on 14th September 1902 and 9th March 1903	Recovered

state that this disease is infectious, but this appears to be doubtful, and the manner of the spread of the disease in the present epidemic was not ascertained

the disease prevailed during the hottest time of the year, and in many it might almost be said that the jaundice was a sequela of the severe malarial fever which prevailed in the jail

for two months previous to the epidemic of jaundice

There was one fatal case, viz, No 8222A, Bhabotosh Piamanik, who was admitted to hospital on the 23rd May with the usual symptoms, he became unconscious at 2 P.M. and died the same evening. The *post-mortem* was performed by me the following morning and revealed on section of the duodenum two irregular inflammatory patches measuring 3 inches by 2 inches situated in the long axis of the bowel above and below the entrance to the bile duct. The liver and all the other organs beyond being bile-stained appeared normal, but the markedly congested state of the brain and its membranes indicated that meningitis had supervened and caused a fatal termination.

On admission all were placed on a strict milk diet and were given small doses of calomel at regular intervals with an occasional saline, under such treatment the jaundice quickly cleared up.

JAUNDICE AT PORT BLAIR, ANDAMAN ISLANDS

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ASST. SURGN.,

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In Port Blair, jaundice is commonly met with in complication with malarial fevers, and its peculiarity consists in this, that some of the cases suddenly take a bad turn and terminate fatally, so quickly, that in many cases no help can be rendered.

Prodromata—It is generally preceded by malarial fever, either of intermittent or remittent type, with constipation. Cases which develop jaundice invariably begin to complain of intense pain in the loins, thighs, and upper arms, of a dull and aching character, and this pain continues throughout the course of the attack in more or less severity. The eyes also show congestive redness.

Symptoms—Generally the fever subsides, or at least comes down before the signs of jaundice are noticed. The aching pain continues in some cases, and tends to increase. The eyes, which were congested in the prodromal stage, become reddish yellow, conjunctivæ bile-stained. The patient becomes apathetic, his features pinched, and his countenance anxious, in fact, his nervous system shows signs of great depression. He answers to questions reluctantly with a low and indistinct voice, and generally in monosyllables. These signs are so invariable that whenever they are noticed in the course of a case of malarial fever, especially when the temperature has come down, suspicion is aroused.

The tongue is generally coated with whitish-brown and thick fur, in some cases it becomes dry.

Appetite dull, but thirst urgent. In some there are nausea and vomiting. The vomited matters chiefly consisting of a good quantity of bile. They are of brownish or greenish yellow colour and sickening in smell. The bowels continue to be constipated, as a rule, but the motions, whether natural or induced by purgatives, are in most cases distinctly bile-stained, and are not so offensive in smell, as is characteristic of the white jaundice stools of India. In most cases there is no tenderness or pain in the hepatic region. Spleen is found enlarged in some cases only, especially where there is history of chronic malaria.

When jaundice becomes well developed, respiration becomes slow and of a sighing character. In severe cases, where the temperature continues high, pneumonia is a common and dangerous complication.

With the development of jaundice, the heart's action becomes slow as a rule, when there is no fever, but of course the pulse rises with the rise of temperature. In some the pulse has been found dicrotic. In cases which ended fatally from internal hæmorrhage, the pulse was found hard, full and bounding. In some cases epistaxis takes place and reduces the cerebral congestion, as is evidenced by the subsidence of headache and other troublesome head symptoms.

The urine from the beginning is of dark and high colour, and when jaundice develops, it shows the characteristic play of colours of "Gmelin's" test. It then stains the linen with a fast yellow colour, which cannot be removed by washing with soap and water. The specific gravity generally ranges from 1010 to 1015, and the reaction is acid. Albumen is invariably found to be present. Under the microscope some tube and epithelial casts are seen in the sediment. Some complain of smarting pain at the tip of the urethra, as is common with high coloured urine. Pruritus or itchininess of the skin, which is a characteristic distressing symptom of jaundice, as is commonly seen in India, is rare in this settlement. The skin becomes dry, and sweating almost ceases. Before death patients complain of a burning sensation all over the body, become restless, and wish to be fanned constantly.

Progress—In favourable cases the bowel acts freely, the flow of urine becomes abundant, the pains abate, the tongue clears up, the appetite improves, and the skin resumes its functions again, and begins to sweat.

But in unfavourable cases, all the symptoms mentioned above are aggravated. The patient becomes more and more apathetic and dull, running on to a state, which can be said to be only short of coma. As regards appetite, the very sight of food is disgusting to the patient. To him almost everything tastes bitter. If fed forcibly with nitrogenous food, such as meat-juice, soup,

and broth, his stomach becomes distended, he eructates constantly, and in many hiccup becomes a distressing and very unfavourable symptom. If a portion of the lung has been hepatized, there is of course a rise of temperature. Otherwise, the temperature is normal at this stage or sub-normal. The patient gradually sinks.

In other cases hæmorrhage takes place. Epistaxis, as has already been said, is generally a favourable symptom, and reduces the patient's suffering by relieving him of headache and heaviness in the head, but internal hæmorrhages are always grave symptoms, and in Port Blair the danger of jaundice lies in these internal hæmorrhages. A patient, apparently doing well, his temperature either normal or slightly above it, his appetite fair, probably he has been sitting up in his bed and talking to his neighbouring patients, but all of a sudden he is reported to have fainted, and before any help can be rendered he is found to be dead. This is the peculiar element of danger in jaundice cases here, *viz.*, its sudden fatal termination.

Post-mortem appearances—After death the temperature of the body rises in many cases. This is generally the case where the fever was of a remittent type and the patient died after coma or convulsive fits. The rigor mortis appears early and lasts longer. The conjunctivæ, the palms of the hands, the soles of the feet, and the skin (in cases of fair-coloured people) are bile-stained, as also the tissues and fluids internally, so much so, that the cut ends of the costal cartilages look distinctly yellow or reddish-yellow in colour. All the organs show signs of acute congestion. In many cases hæmorrhagic infarcts are found on the surface of the lungs, liver and kidneys. *Ante- and post-mortem* clots are found in the right chambers of the heart, which can be traced to the big veins and pulmonary artery. The *ante-mortem* clots are generally of yellowish hue, thick in consistency, stratified, and adherent firmly to the cordæ tendinæ and musculi papillares. Usually a little yellowish fluid is found in the pericardial sac. The liver is found congested, and in some cases it is enlarged. The gall-bladder, in most cases, is found distended with thick and gritty bile. Its mucous membrane discoloured and the bile-ducts in many cases blocked up with thick, tenacious, inspissated mucus. In a few cases coagulated and fluid tarry blood has been found in the gall-bladder. In some cases the mucous membrane of the duodenum is thickened, specially where the common bile-duct opens into it. The contents of the intestines are sometimes muddy, but in most cases bilious, not like the abitious white fæces of jaundice, as is commonly seen in India. The pyloric end of the stomach, and the hepatic flexure of the colon, are found in some cases to be of brownish-yellow colour, probably due to the dialysis of bile-acids and pigments, from the gall-bladder. Spleen, if not

malarial, does not show any particular change. Kidneys are found congested, the expanded portions of the calyces containing some reddish yellow fluid. In some cases the capsules are adherent. The scalp is generally congested. The skull and the dura mater are coloured yellow, and the vessels of the meninges and the brain are engorged. The subarachnoid spaces contain yellowish serum. In some cases lymph, coloured yellow, is found at the posterior and lower parts of the brain. The substance of the brain itself is coloured yellow, as also the fluid in the ventricles. Sometimes large hæmorrhages, especially meningeal, are found in cases which have terminated in sudden coma. In cases of sudden death, either this or other kinds of hæmorrhage are commonly seen, such as melæna, or pulmonary apoplexy. In the former, the whole of the intestines, especially the small, contain black tarry blood, mixed with fæcal matter. In the latter cases both the lungs are found to be full and yellowish black, blood extravasated in the substance, and on section dark clots of blood are found in the cut-ends of the bronchial tubes. In some cases coagulated and fluid tarry blood is found in the stomach. The peculiarity is, as has been said, in the duodenum, the gall-bladder, and in the bile-ducts. In some cases the duodenum is found cedematous and swollen. The lumens of the common bile and cystic ducts are found filled with thick, tenacious, inspissated mucus. The gall-bladder contains thick and gritty bile, sometimes coagulated and fluid blood.

Cause—In Port Blair jaundice cases are invariably associated with malaria, which may be said to be an essential cause of it, inasmuch as the malarial parasites are the great destroyers of the coloured corpuscles of the blood. In this sense, the jaundice of Port Blair is of a hæmatogenous variety, but why out of so many thousands of cases of malarial fevers only a few develop jaundice, is not easily understood. But whatever may be the real cause of the complaint in the majority of cases, it has been noticed that they come from such occupations as necessitate sudden or constant and prolonged exposure to rain, *viz.*, firewood cutting in the jungle, repairing embankments, working in the brick-fields, cultivating and watching the paddy-fields, &c.

It differs from Weil's disease in the following points—

- 1 It never occurs in epidemic form
- 2 There is no definite course of the disease, or of the fever accompanied with it. The accompanying fever is malarial
- 3 It does not set in abruptly
- 4 No pain in the cheeks has ever been complained of by patients with jaundice
- 5 The blood of typical cases of jaundice with fever has shown malarial parasites under the microscope

Statistics—During the ten years from 1892, 588 cases of jaundice were treated in the Viper Hospital. These of course include the most mild cases also. Of these, 351 were Hindus, 123 Mahomedans, 107 Burmans, and 7 Native Christians. According to class, 506 were labouring convicts, 13 invalids, and 69 self-supporters. Of these 588 cases, 78 or 13.26 per cent died.

Treatment—As soon as jaundice is suspected a dose of calomel and soda forms the best initial treatment. After the bowels have acted well, regular administration of diaphoretics and diuretics, with which sulphate of magnesia or soda is combined, may be said to be a routine treatment of such cases here. Cases in which the hepatic function has been deranged, or in which the tumefaction of the duodenum or inflammation of the ducts and gall-bladder is present, improve considerably under the above treatment. In such cases, counter-irritation by mustard plasters, or by iodide of mercury, does good. Local application of diluted nitro-muriatic acid has also been used in many cases with benefit. In all the cases quinine is given to counteract malaria. Pain in the muscles is best relieved by shampooing and rubbing the parts with some liniments, such as liniment of camphor or camphor-oil. Other symptoms are treated as they arise, such as hiccup by morphia, creasote mixture, the melæna by eigot, gallic and sulphuric acids, &c.

As regards diet milk, sago, arrowroot, or rice congee are given at regular intervals, and in majority of cases against patient's will, as they have no appetite at all at the commencement, and everything tastes bitter to them, so long as the disease is at its height. As appetite improves soft rice, dal-soup, bread, meat soup, &c, are given.

As the disease is slow in its course, so is the convalescence, in which stage small doses of quinine, combined with stychnia, and non-astringent preparations of iron, with bitter infusions, act as a very good blood-restorative.

Few cases of relapse have been noticed.

LIVER CHILL AS A FACTOR OF DISEASE IN THE TROPICS

BY MAJOR A. E. GRANT,

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THE main object of the present paper is to impress upon readers of this journal more especially those of them who have but recently arrived in the tropics, the extreme importance of possessing as clear an understanding as our present knowledge will permit of in regard to the mode of production, and far-reaching effects, of so-called *chill*. The old term 'liver-chill,' which is still largely used, is in many ways objectionable 'abdominal chill' or simply

'chill' are both preferable as being more general and non-committal. Saving the matter of avoiding the use of unboiled 'drinking water' derived from any but known and approved sources, we know of nothing than which it more urgently concerns a new arrival in the tropics to possess a thorough knowledge, yet we have found that the average layman, even after long residence in the tropics, is almost, if not entirely, ignorant of the subject, whilst not a few medical officers have appeared to us to possess decidedly vague, and quite inadequate, ideas as to its intrinsic importance.

The first fact to be grasped in this, *viz*, that after leaving Port Said, on the outward voyage, one passes from a 'thoracic' to an 'abdominal' climate, not absolutely, of course, but relatively so. That is to say, in Britain and other countries within the temperate or cold regions the ever-present danger is 'taking cold,' commonly in some portion of the respiratory system, whilst in the tropics the danger consists mainly in the risk of a sudden 'chill' which, though it does not necessarily affect the abdominal system alone, or even in part, yet, in the vast majority of instances, does produce its injurious effects, directly or indirectly, through that system, the respiratory organs usually escaping entirely.

The next point is this, *viz*, that whilst, in one sense, there is a close similarity, or even identity, in the two conditions, or, rather, in the mode of their production, in another sense, and especially from a practical point of view, there exists a wide and well-marked distinction. Admitting that in a large number of diseases attributed to cold or chill the presence of a *specific* factor, in the shape of a particular micro-organism, is essential, it is, nevertheless, unnecessary to dwell upon this point for our present purpose, inasmuch as medical men—in the reaction against a too narrow etiology—have been forced to realise that the specific factor of an ailment, even though it may be present for long periods in the human organism, is not seldom powerless for evil unless and until the *general* or *non-specific* or *accessory* factor or factors, which enable the special organism concerned to overcome the natural resistance of the tissues, are called into play. Of such general factors of disease there is probably none, possessed of a greater potentiality for evil than 'cold,' meaning by this term any act or agency by which the temperature of the body, as a whole, or of certain organs or tissues thereof, is unduly lowered. That this is so has been proved to some extent by direct experiment on animals, whilst the clinical evidence available in support of the assertion is overwhelming.

Wherein, then, lies the difference between 'taking cold' and 'getting a chill'? Again, why is it that under one set of climatic conditions the former is so common and almost invariably makes for laryngitis, bronchitis, pneumonia,

pleurisy, etc., whereas under other climatic conditions the respiratory system nearly always escapes scot-free, whilst the abdominal effects are so well pronounced and so frequently of the most serious nature? Before answering the foregoing queries, it is necessary to guard ourselves against misconception by stating clearly that, on the one hand, taking cold is by no means unknown in the tropics. I am dealing only with the average Indian climate of the *plains*, and, on the other, that a chill is by no means unknown in temperate climates. As to the first of our queries, it seems to us that the difference between taking cold and getting a chill depends mainly on the fact that in the former case the effect is produced *directly* by air, and especially (even necessarily) relatively-moist air, which is *actually cold*, i.e., of a low temperature as compared with that of the body tissues, whilst in the latter case the effect is produced *indirectly* by *relatively-warm*, slightly, or it may be very, moist air, especially when this is in fairly rapid motion, playing upon wet clothes or the wet body surface. In the first case it is the inhaling of air much below the body temperature or the external and probably prolonged contact of the latter upon a body insufficiently clad, i.e., a body not surrounded by a sufficient layer of warm, more or less stationary air, which causes the mischief, whilst in the second instance the mischief arises from the sudden and great loss of body heat which is the necessary corollary of rapid evaporation from a wet skin or from saturated clothing of the kind which favours such a process (*vide postea*).

In passing, it is both interesting and of the highest importance to note that if air is sufficiently dry, i.e., if its relative humidity is very low, it does not much matter whether it is extremely cold or extremely hot, in neither case is it likely to be productive of any evil effects, always supposing that it is not moving at a very rapid rate. Further, it should not be forgotten that very 'dry' air is decidedly inimical to the continued existence of most micro-organisms. With cold dry air we are not now concerned, but it may be pointed out that dry and very hot air *in rapid motion* exerts, if long continued, a very deleterious effect upon the body generally, and produces not only a feeling of lassitude but an actual lowering of vitality and an impaired vital resistance, a matter which has not received sufficient attention, probably because the first effect is to stimulate the bodily activity,* whilst the after-effects are generally masked by the intervention or addition of other factors. Thus, a young and vigorous European may assert, truthfully, that

he has not 'felt' the hot weather and may appear, on superficial examination, to be quite 'fit,' yet he is very likely to be 'bowled over,' shortly after the onset of the rainy season, by a bad attack of dysentery, hepatitis, etc. In many such cases the true explanation is that an undue amount of exposure to the powerful sun and burning winds of the preceding months, day after day, during work or leisure, or both, has resulted in a distinct (though undetected) deterioration of the blood, amounting not seldom to actual anæmia, or some closely similar condition, by which his tissues have become enfeebled to a serious degree, and their power of resistance to any unfavourable influence reduced to a minimum. Some persons, especially those of slight habit of body, dark hair and naturally ruddy complexion, appear to be affected but slightly, whilst those of a fuller habit with fair hair and a pale complexion, seem to us to be more liable to suffer, but the distinction is not absolute, only relative. There is also the factor of exertion, i.e., expenditure of energy, to be reckoned with, whether mental or bodily, or both, the man who exercises brain and body steadily, but in moderate degree, doing better than he who inclines to one extreme or the other†. It would be well worth the trouble taken if several medical officers would examine the blood of some half-a-dozen persons, each, week by week, from the last month of the cold to the end of the first month of the rainy season, under varying conditions of diathesis, age, work, exercise, etc., and in different 'climates' as regards temperature, relative humidity and wind velocity.

Coming now to our second query, *viz.*, why it is that taking cold, with its effects upon the respiratory system, is so common in cold or temperate climates, whilst in warm climates the more usual evil is chill, with resulting injury to the abdominal organs, the solution of the problem appears to depend mainly upon the following considerations. In a cold climate, with a view to the protection of the body surface against the too free impingement of cold air, people naturally dress warmly and, further, during very cold and windy weather, seek to neutralise the effects of the cold air necessarily inhaled by maintaining the temperature of the respiratory passages through the use of special throat wrappings or coverings. Perspiration, under these conditions, unless the body is over-clad (a most serious evil), is more or less insensible and this, in conjunction with the fact that the abdomen is well-covered, ensures the absence of danger to the contents of the latter. Certain classes, such as cooks, engine drivers, stokers, etc., who are liable, often when under-

* This is sometimes well seen in India and was specially noticed in certain northern stations (* Wei Hai Wei) during the recent campaign in China. Highly strung people suffer most and are apt to become over active and sleepless, whilst their more phlegmatic companions are merely agreeably stimulated.

† This is a matter closely connected with what we prefer to call 'climatic' or 'tropical' debility, and which we hope to discuss in the columns of the *I M G* some day in relation to the excellent paper on Neurasthenia in Anglo Indians by Lt Tucker, I M S, in *I M G* for Feb'y, 1903.

clad, to *sudden* great changes of temperature, eg, from the heat of a blazing fire to keen frosty air and a biting wind, may, and do, suffer severely, but such cases are merely the exceptions which prove the rule. In the tropics, on the other hand, the greater part of one's life is passed in the open air—as contrasted with the frequently foul atmosphere of rooms in Europe—and the respiratory organs are generally in excellent order, whilst the external air is, comparatively speaking, warm. Even, therefore, if the thoracic skin surface is moist, there is little or no danger to the healthy, resistant organs lying underneath whilst the risk of injury through the direct inhalation of cold air is practically absent. But, as regards the abdominal system, things are very different. In the first place there is—probably owing to a generally deficient 'tone' of the vaso-motor mechanism acting, not infrequently, in combination with a too abundant dietary and a too liberal use of alcohol—a varying, but by no means negligible, tendency to abdominal, *ie*, portal, congestion or stagnation. Secondly, there is almost always a free diaphoresis over the abdominal surface, to which, in the vertical position, is added the sweat which flows downwards from the upper portions of the trunk and aids in producing a more or less saturated condition of the clothing at this point. Thirdly, there is the fact that the clothing worn by males or females dressed according to European custom, though different for the sexes, is in both cases liable to favour the undue exposure, physiologically speaking, of the abdomen to currents of air. Doubtless, by the adoption of comparatively simple precautions, this can be avoided, but in practice the exceptions are unfortunately very numerous.

(To be continued)

AN ATTACK OF GALL-STONES—COLLAPSE DEATH

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M—S—, Mahomedan male, aged about 50 years, a prisoner in the Mymensingh Jail, was admitted into hospital on 18th April 1895, suffering from a severe attack of biliary colic. He had suffered from occasional attacks of biliary colic during the previous two years, and had been in hospital in January, and again in March, during the year of the present attack. The previous attack subsided under the influence of opium, salines and fomentations. On the 19th, in spite of stimulants, he was much prostrated, during the day he passed

one loose motion of white faecal matter stained with blood. On the morning of the 20th there was some improvement, but subsequently the paroxysms of pain which had characterized the onset of the attack returned. During the day he passed eight motions, at first consisting of blood-stained faecal matter, subsequently of pure frothy blood and mucus. Next morning the Hospital Assistant reported that, in the early part of the night after a hypodermic injection of morphia, he had fallen asleep, but at midnight he awoke in great pain, became collapsed, and died. From the time of his first admission to hospital in January 1895, his motions remained light-coloured, his urine contained bile pigment, and the conjunctivæ were slightly bile-stained, but never markedly so. No calculi were ever found in the faeces.

Post-mortem examination—The body was well nourished, the tissues were slightly bile-stained. Heart, lungs, spleen, and kidneys were healthy to the naked eye. The intestines were intensely injected,—the injection began to be marked two feet below the duodenum and continued thence to the transverse colon. The mucous membrane was greatly congested, of a dark plum colour, Peyer's patches were markedly congested. Scattered throughout the mucous membrane were numerous patches of small recent hæmorrhages. The bowels were empty, save for a quantity of blood-stained mucous fluid. There was no ulceration anywhere, no peritonitis; slight patches of hæmorrhage were present in the folds of the mesentery. The liver was somewhat diminished in size, yellowish in colour, soft and friable. The gall-bladder was moderately distended with greenish-coloured bile. Its walls were not thickened, it contained no calculi, and the cystic duct was natural in size. The common duct and the hepatic duct, with its right and left branches, were dilated. The common duct at its commencement admitted the fore-finger into the right and left branches of the hepatic duct, the thumb and fore-finger respectively could be passed. The common duct contained ten small calculi. In the hepatic duct just beyond the junction of its right and left branches was a large calculus firmly impacted, and behind this in the right branch of the duct, was a second large calculus. Behind these calculi the right branch was so dilated as to form a small sac, and the large calculi were freely movable when pushed back into this sac. The whole series of calculi thus situated formed a cone with its apex at the duodenal opening of the common duct. The mucous membrane surrounding this opening was swollen, but there was no obstruction. The ramifications of the hepatic ducts in the substance of the liver were dilated, and contained thickened bile, and soft yellowish masses of pigment matter. The calculi in the common duct were more or less cylindrical in shape, and

facetted at each extremity. The larger calculi were rounded and irregular in outline. All the calculi were composed almost entirely of black and brown pigment matter, were soft and easily broken down on pressure.

Remarks—These calculi must have been formed in the liver in the hepatic ducts. The attacks of colic were probably due to the big calculus clogging up the hepatic duct, and partially slipping back in the intervals between the attacks. The softness of the calculi will explain all absence of ulceration. The hæmorrhage was from the mucous membrane and not from any particular vessel, and is remarkable considering the slight jaundice present throughout the illness.

THE LIFE-SPAN OF THE GUINEA-WORM

By ARTHUR POWELL, B.A., M.Ch.,

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A PAPER on this subject by Sir Patrick Manson appeared in the *British Medical Journal*, page 10, July 4th, 1903. In Sir Patrick Manson's cases the time of possible infection extended from February to June. In the cases under consideration the period of exposure in the endemic area was only two days. I am indebted for the particulars to Messrs M. Cussetjee and Fazalbhoy Chinoy. A party of sixteen gentlemen with five servants—all residents of Bombay, a city with a good artificial water-supply, where guinea-worm is only seen in patients from the country, chiefly from the Dekkan, left Bombay and reached Mahad on April 20th, 1902. They all stopped there for two days drinking unfiltered the water of a well. They returned to Bombay on the 22nd of April 1902.

On the 2nd or 3rd of April 1903, the first worm made its appearance in the leg of one of these gentlemen. Up to the first week in July worms, to the number of nine, continued to be discharged from his body.

Doubtless owing to injection with perchloride of mercury the exit of some of these worms was delayed, as they were killed and considerable cellulitis and suppuration ensued.

The next patient was delivered of a worm on the 1st May 1903, five other patients between that date and May 20th, 1903. Seven patients in all were attacked—six of the party of sixteen and one of the five servants. Nineteen worms in all were extracted.

None have come out since the first week in July up to the present date, 3rd October 1903.

The shortest period in these cases was 345 days, the longest 435. The great majority of worms appeared a year and two or three weeks after the date of infection.

The estimation of the life span of this worm in its human host is a matter of importance in prognosis in the case of persons exposed to infection. Thus I had no hesitation in informing the ten gentlemen who have not yet suffered that they have little reason to fear the appearance of worms—a matter of considerable apprehension to some of them.

Enquiries were made among the inhabitants of Mahad as to the prevalence of the parasite in the district. The replies indicate that about half the population suffered from guinea-worm this year.

Two points of interest in connection with this parasite may be mentioned here. There is frequently considerable fever a few days before the worm becomes palpable. Two of these cases suffered from fever with swelling of the face and hands. The sensation of swelling and tension to the patient is greater than the appearance to the surgeon seems to warrant. This swelling of the face and hands I have frequently observed when the worm was in the lower extremities, and seems independent of the situation of the parasite.

The origin of this fever may be suspected from the absence of malarial parasites and an increase in the proportion of the eosinophile corpuscles in the blood. In a paper* recently read before the Bombay Medical and Physical Society I described six cases of guinea-worm infection in which examination of the blood showed 4.75, 5.5, 7.5, 7.5, 8 and 12.25 per cent of eosinophile corpuscles respectively. The pus from one sinus contained 19 per cent eosinophiles.

BILHARZIA IN INDIA

Some comments were made by the London correspondent of this Gazette in the July number on the presence of Bilharzia in India, and quotations given from a letter by Colonel Hatch, I.M.S., in the *British Medical Journal*.

I may say that that letter was a comment on a prior paper by me in the *British Medical Journal*, Vol. I, 1903, page 490. I there described the first recorded case of Bilharzia in a native of India who had never left this Presidency, and so had contracted the disease in India.

I acknowledged that many imported cases had been seen by my colleagues in this college, and referred to Colonel Bomford's previous observation of the parasite in indigenous bullocks in Bengal.

My patient was a Hindu syce who had never left India, and lived either in Poona, Ahmednagar or Bombay city for the past twenty years.

* "Examination of the Blood in three thousand four hundred cases of fever in Bombay"—*Trans. Bo. Medical and Phys. Soc.*, September 1903.

ABSCESS OF OVARY PRESENTING ALL THE SIGNS OF OVARIAN CYST

BY C M THOMSON, M B,

LIEUT COLONEL, I M S,

Secunderabad

SUPPURATION in an ovarian cyst frequently occurs, though I have not myself seen any case, interperitoneal abscess the result of perimetritis is not unusual, pelvic abscess the result of parametritis is fairly common, but an abscess situated in the ovary itself such as is shown in the accompanying photographs, where the whole tissue of the ovary has been transformed into pus, the wall of the abscess being formed by a thickened layer of ovarian tissue, is very uncommon. I have never seen a case of the kind before, where the appearances and the whole history of the case were so peculiar, and the difficulties of accurate diagnosis so great.

From the specimen, the etiology of the abscess seems clear enough—inflammation—probably gonorrhœal—extended up the tube and from its extremity passed on directly into the ovary, without infecting the peritoneum or the pelvic

of the abscess has been thrown backwards over the blowpipe to show the position of the communication between the fimbriated extremity of the tube and the ovary, now converted into a large suppurating cavity



I.



II.

Radiamah, Hindu, aged 30 years, was admitted into the Civil Hospital, Secunderabad, on June 13th 1903, for a large abdominal swelling, which she alleged had only commenced four months previously. She was married, but had no children, and according to her own statement, was in good health till four months ago, when she first noticed the swelling, her monthly periods stopped soon after the first appearance of the swelling, and have not returned. She was a delicate-looking woman considerably emaciated, there was a large globular swelling in the centre of the abdomen, which on inspection presented all the appearances of a pregnant uterus of eight months, but was very slightly movable, she complained of a certain amount of pain in the abdomen, and on admission her temperature varied from 100°F to 102°F in the evening, the morning temperature was generally normal. The swelling was regularly globular in appearance, there was dulness on percussion in front, and on the right side the dulness extended into the right flank. There was no zone of resonance in this position, on the left side there was resonance all round the margin of the tumour, there was a very distinct fluctuation thrill all over the swelling, no foetal heart or placental bruit could be heard on auscultation.

cellular tissue. In the photograph No I the blowpipe is shown passing from the fimbriated extremity of the tube, which had become firmly adherent to the ovary all round, inwards towards the uterus. Photograph No II shows the interior of the abscess cavity, with the opening of the tube into it, part of the wall

On vaginal examination all the usual signs of an ovarian cyst were found, the uterus was felt, between a finger in rectum and one in vagina, to be displaced downwards and towards the right, above the cervix the elastic sac of the tumour could only just be reached by the examining finger to which there was a clear fluctuation wave communicated on percussion of the abdominal swelling.

She was kept in bed, fed up, and her general health attended to for nearly a month, her temperature fell, but never came to normal in the evening. As she was evidently losing ground rapidly I determined to explore the abdomen with a view to confirming the diagnosis of a suppurating ovarian cyst.

Operation—An incision was made and peritoneum opened enough to admit the finger, and a small hypodermic needle pushed into the cyst wall and pus found, the abdominal incision was then enlarged, when there was a free and stinking discharge of purulent fluid from peritoneum, the cyst was adherent to peritoneum all round, and a considerable portion of omentum had to be removed, as it was very firmly adherent, the evacuating trocar was then pushed into the sac wall and immediately stinking pus flowed out, the adhesions were carefully separated and the cyst withdrawn as far as possible out of abdomen. The pedicle was found to be very short and broad, it was ligatured with No 5 twisted China silk. The abdomen was then flushed out with a large quantity of warm saline solution, till the returning fluid was quite clear, all hæmorrhage stopped, and the abdominal wound sewn up. At the end of the operation the patient became very weak and pulse hardly perceptible. She rallied and was doing fairly well when I saw her at 5 P.M., but she died during the night.

Post-mortem—The wound was found to be accurately adjusted, and the pedicle ligature was in place and quite firm. There was no ovary on the right side, that on the left was found not to be diseased, the uterus was apparently healthy and was not adherent. The pus which was found in the peritoneum was evidently secondary to the formation of the abscess in the ovary, the adhesions which were found were also due to the same cause. In the recent specimen the circular attachment of the fimbriated extremity of the tube to the ovary was very evident, this is partially seen in photograph No II.

FOUR CASES OF MENORRHAGIA SUCCESSFULLY TREATED WITH SUPRARENAL GLAND EXTRACT

By C. C. MURISON,

LIEUT., I.M.S.

HAVING read in the medical papers of the hæmostatic effect of the extract of the supra-

renal gland, I was induced to give it a trial in the following cases of menorrhagia, and which proved to have very beneficial results—

Case No 1—Miss C, æt 34 years, married 12 years, has had two children, aged 7 and 4 years respectively. She was quite regular in her menstruation till her second pregnancy, and ever since she has weaned her second child (3½ years ago) she has suffered from very severe menorrhagia and dysmenorrhœa.

In April 1902 she consulted me and stated that she becomes unwell from about every 27 to 30 days, her periods last from about 8 to 10 days, she loses a great deal of blood and suffers great pain from passing clots of blood, a few days before menstruating she has a slight headache and pain in the lower part of her back, but both of which disappear as soon as she is unwell. From about the second day of her menstruation she suffers from great pain in the lower part of her back caused apparently from passing clots of blood, and which generally disappear a day or two before she stops menstruating.

Unfortunately at this time I had no preparation of the suprarenal gland, but ordered a mixture containing ergot, cannabis indica, etc., and told her that I was going to send for some medicine which would most probably lessen the discharge of blood and perhaps relieve the pain.

On 26th May 1902 she became unwell, and the next morning she lost a lot of blood, passed clots of blood and suffered pain. According to my instructions she took two 5-grain tabloids of the suprarenal gland extract after breakfast, and about two hours later the discharge of blood was distinctly less, she was passing no clots, and consequently had no pain. In the evening she began to pass more blood and clots, and so she repeated two tabloids with very good results. On the morning of the 28th May 1902 she took two tabloids, and by noon she stopped menstruating. I then advised her not to take any more tabloids unless the discharge was excessive or she was suffering pain. In the evening she passed a little blood, but did not take any tabloids. From the morning of the 29th she took a tabloid morning and evening till the evening of the 31st, and she was quite well on the morning of the 1st June 1902.

The lady was greatly pleased at the result, as during this period she lost comparatively very little blood, passed very few clots, suffered very little pain, and her period was shortened by about three days.

In the beginning of June 1902 she, according to my advice, lay up in bed for coccygodynia, a functional mitral systolic murmur, and a disordered action of the heart due chiefly to low fever which she had been having for some time, and which she had more or less neglected. I may here state that she had suffered from coccygodynia and her heart on previous occasions.

The coccygodynia may be due to a fall which she had three years ago. I placed her on light nourishing diet, and prescribed a mixture containing iron, quinine, steychnine and arsenic. I also ordered three grains of quinine sulphate to be taken every morning as a prophylactic against fever. After a fortnight her heart was quite normal in its action, the systolic murmur had disappeared, and the coccygodynia was greatly relieved.

On 25th June 1902, she became unwell, and that morning she stopped taking the three grains of quinine which always caused an excessive discharge. She took one or two tabloids whenever the discharge was excessive or she had much pain. She was quite well on the morning of 30th June 1902.

Two days after becoming well she had a slight attack of fever, which no doubt would have been prevented if she had continued taking the quinine every morning. This fever was treated with diaphoretics and quinine, and it continued on and off for three days, and caused the mitral systolic murmur to reappear. This murmur disappeared in five days, and I allowed the patient to get up gradually about the commencement of the second week in July.

During her menstruations in July, August, September and October she continued taking the three grains of quinine in the morning, and also took the suprarenal tabloids whenever she lost much blood or suffered pain. The suprarenal gland extract greatly, if not completely, counteracted the emmenagogue action of the quinine. The menstruations in these four months generally lasted about four or five days, the flow was not excessive, and she passed only a few small clots and consequently suffered very little pain.

The suprarenal gland extract has not, as far as I know, had any injurious effects.

I last saw the patient on the 23rd October 1902, and she was then quite well except that the coccygodynia troubled her occasionally.

Case No 2—Mrs A, *æt* 33, married 4½ years. She was delivered of a full time still-born child on 19th April 1902. About twelve years ago she had some pelvic trouble after a fall, which caused her uterus to become fixed to the left, and since then she has suffered from pain during the menstrual flow.

On 3rd June 1902, I was called in to see her as she had been unwell for over a week, and the discharge was excessive. I ordered two 5-grain tabloids of suprarenal gland extract to be taken thrice daily. About three hours after starting this treatment the menstrual flow began to lessen, and by the next evening she was quite well. She took the tabloids for two days. In her subsequent menstruations she did not require the tabloids.

Case No 3—Mahomedan puidah lady, *æt* about 23 years, married six years. Has had three children aged 5, 3 and 1½ years, respectively.

No definite history could be elicited as to her previous menstruations except that at the last two periods she had an excessive flow, and that she was unwell for about a fortnight each time.

On 18th July 1902, I was called in to see her as she had been unwell for four days and was losing a large quantity of blood.

I ordered one 5-grain tabloid of suprarenal gland extract to be taken thrice daily. Three or four hours after taking the first tabloid the discharge began to lessen, and by next morning she was quite well. She then stopped taking the tabloids, and the following morning she found herself unwell again. I consequently advised that the tabloids should be continued till she had been quite well for at least a day or two. She stopped menstruating on the 21st July 1902 (seventh day). In October 1902 I was informed by the husband that his wife takes a couple of tabloids whenever the menstrual discharge is excessive and that the result is very satisfactory.

Case No 4—Parsi lady, *æt* about 29 years, married 11 years. Has had no children but several miscarriages, and which always occur about the time she ought to be unwell. On hearing of *Case No 3* her husband asked me to see his wife in order that the menstrual discharge may be lessened, and which may prevent the miscarriages in the future. They were both very anxious to have a family. The wife stated that for the last ten or twelve years she has always had excessive flows, and that her periods generally last about ten days.

I prescribed one 5-grain tabloid of the suprarenal gland extract to be taken thrice daily during her menstrual periods, and to be continued a day or two after becoming quite well.

She carried out my instructions during her menstruations in September and October and with very good results. The periods lasted about six days each, and the discharge was greatly reduced.

A CASE OF TRANSPOSITION OF VISCERA RECOGNISED DURING LIFE DEATH FROM MALARIAL FEVER *POST-MORTEM*— TOTAL CONGENITAL ABSENCE OF SPLEEN

BY R. D. SAIGOL, F.R.C.S., EDIN.,

LIEUT., I.M.S.

PRIVATE H, aged 24, came under my care as a case of slight catarrhal jaundice. While examining to ascertain the condition of his liver and gall-bladder my attention was drawn to absence of the usual dulness in the hepatic region. Closer examination of the case resulted in the discovery of his heart on the right side, but as the liver and spleen could not be definitely located, I presumed the case to be one of partial transposition only.

On carefully mapping out the dull areas, with the assistance of Captain R W Clements, R.A.M.C., I was struck with the absence of any area large enough to locate the liver either on the right or on the left side. Figs 1, 2 and 3 are photographs taken during life. Fig 1 being the front view shows the cardiac dulness on the right side continuous at its lower and outer part with an area $2\frac{1}{4}$ inches wide on a level with the 5th and 6th interspaces along the base of the right lung, which as it passes backwards and a little downwards narrows slightly before joining with the renal dulness at the back. This is well seen in Figs 2 and 3. The four circles mark the spots where the valvular sounds were best audible, the big oval inside the cardiac dulness marks the area of absolute dulness. The dots along the left margin of the sternum mark the interspaces.

Fig 3 is the back view showing the renal dulness (on either side of the spinal column), the left being higher and bigger than the right. Continuous with the left is an area on a level with the 6th, 7th and 8th ribs which, passing outwards and upwards, ends abruptly a little below and external to the nipple.

In the absence of proper liver and splenic dulness, it was presumed that the area on the right shown in Figs 1 and 2 indicated the liver not transposed, but either atrophied or partly hidden by a probably transposed stomach or other resonant structure, and the area on the left (Fig 1) to be due to spleen.

The jaundice disappeared in about two weeks, but before the patient was discharged from hospital he got an attack of malarial fever from which he had previously suffered, being in hospital at Mandalay for 75 days.

He was in the hospital here once for thirty-eight, and a second time for seven days for the same complaint. During these attacks I examined his blood several times, and always found the Benign Tertian parasite. This time the fever reappeared on the second day, but about an hour later than on the previous day. His blood was examined and a few Benign Tertians were seen. The fever unaffected by quinine (both hypodermically and by mouth) repeated itself for the next three days, postponing by about two hours every day, and accompanied by symptoms of syncope which gradually increased with each attack. Blood examined on the third day (from commencement of fever) showed well formed intra-corpuscular Benign Tertians—the parasite, the nucleolus and Schœffner's dots being clearly brought out by Romanowsky's stain.

Blood examination two days later (24 hours before death) revealed curious extra-corpuscular bodies round or pear-shaped, with either a bud or a process (straight and tubular) much thicker than a flagellum, the body and the process had medium-sized granules of dark pigment actively motile. These processes resembled thin pseudopodia, but were longer and quite immotile.

Some of these bodies are shown in Fig 5. A hypodermic of quinine was given and blood examined again in the afternoon, when the following appearances were noticed: the red cells were much distorted and there were no intra-corpuscular forms of the parasite. The extra-corpuscular forms which were circular, had no processes noticed in the morning. The pigment granules were lining the limiting membrane (leaving the centre unoccupied) almost protruding on the surface in some cases and quite motionless. In addition to the pigment each parasite contained one clear circular unpigmented area, which I believe was the nucleolus. These appearances are shown in Fig 6. Besides these parasites, the polymorphonuclear leucocytes contained one or two circular dark bodies and two similar ones were noticed inside one eosinophile pointing apparently to phagocytosis by these cells. I believe these black bodies to be very coarse pigment granules (though they were more round than usually seen).

The same specimen was examined next morning—the red cells were still distorted and the extra-corpuscular bodies circular and motionless, but the pigment granules had moved to the centre and were motile. The leucocytes were unchanged.

At 12 midnight the patient had another attack of fever and began to get livid and his general condition very alarming with symptoms of threatening syncope, for which stimulants were freely given. When I saw him the next morning his face was somewhat puffy and cyanosed, and the whole body covered with patches of lividity in various shades. He complained of severe pain in his toes and legs. As his pulse and general condition was much better, the question of venesection to relieve his heart which was threatening to fail before was put aside for the present. Shortly after, however, he became suddenly comatose, his pulse being imperceptible at the wrist and in about ten minutes, before I could see him again, expired suddenly apparently from heart failure*.

At the autopsy the case was confirmed as one of transposition of viscera, and the following points of importance regarding the various organs were observed.—Heart and arch of aorta completely transposed, from the convexity of the latter the following branches were given off, from left to right and in order—(1) The innominate, (2) right common carotid, (3) right vertebral, and (4) right subclavian, the last two by a common trunk just at the origin. Lungs, collapsed, not congested, the right had two and the left three lobes.

Stomach transposed, along the lesser curvature glands as big as a large plum, soft and uncon-

* The temperature chart shows an intermittent type the temperatures during the illness varying from 101.4° F to 102.4° F.

gested were noticed (Fig 4 (b)) There was no lesion to account for the enlargement which was non-inflammatory The mesenteric glands were bigger than normal and distinctly visible

Large intestines—The cæcum was mesially situated (opposite the sacral promontory), and the sigmoid flexure was on the right side (Fig 4 (b)) The vermiform appendix was healthy and rose from the right and back part of the cæcum

Liver, very large and almost black in colour, completely transposed, occupying the left hypochondriac, epigastric and part of right hypochondriac regions, the two ends were in contact with the kidneys on either side The gall-bladder was distended and opposite the ninth costal cartilage in the left nipple line

Spleen was entirely absent

Suprarenals were enlarged to nearly twice the usual size

The interesting points of the case are —

1 According to the patient the transposition was never recognised before.

2 The difficulty of localising the liver and spleen during life is shown in Fig 1 There was no structure found in front of the left half of the liver, why it was tympanic during life, I am unable to say

3 Total absence of spleen No abdominal operation of any kind had ever been performed as seen from the absence of any scar, as well as ascertained from the patient *

4 Though he has had three attacks of malarial fever before, can the absence of spleen be held responsible for the severity of symptoms ending in death this time?

5 The very dark colour of liver (not congestion), the enlargement of glands along the lesser curvature of stomach and in the mesentery as well as the large size of the suprarenals had perhaps something to do with the absence of spleen, i.e., were probably compensatory

6 This case shows clearly that spleen is not an absolutely necessary organ, and though it has not been ascertained what share the spleen has in the destruction of organisms that gain admission in the system, how and to what extent this patient was equipped against bacterial invasions, I am not in a position to explain, but believe that the hypertrophy referred to in para 5 above was compensatory

7 Detection of parasites with processes and the peculiar arrangement of pigment lining the membrane shown in Figs 5 and 6 about 20 hours before death Such racquet-shaped bodies have, I believe, never been noticed before, whether they were any new form of parasite or only the result of quinine, I cannot say

The stained specimens do not show these processes noticed in a fresh one

8 As the symptoms presented by the case (i.e., chiefly of heart failure) were quite distinct

from any of the forms of malarial fever I have read or seen, in the absence of any heart lesion, I venture to suggest "syncopal form" of malarial fever as probably the best name for the disease. The striking point about the case was that though symptoms were so severe as to end in sudden death, yet no malignant form of the parasite was found

MALARIA AS SEEN IN THE ANDAMANS PENAL SETTLEMENT

BY ERNEST E WATERS, M.B., EDIN.,

CAPTAIN, I.M.S.,

Officiating S.M.O., Port Blair

THIS is the disease that causes by far the greatest amount of sickness in the Settlement, and which consequently causes a serious disorganisation of the labour supply and a heavy financial loss to the administration

In 1902 there were nearly 14,000 admissions from malaria, and though only 57 deaths were directly attributed to this disease, yet I am convinced that many patients who died from other diseases had their constitutions undermined by previous malarial attacks In other words, a healthy man has strong resisting powers to the bacilli of dysentery or tuberculosis, but once his vitality is lowered by malaria he falls an easy prey to these complaints

The tax of malarial fever is a very heavy one; taking 14 days as the average period for which fever cases are non-effective, malaria alone in 1902 accounted for 196,000 labour units (one man for one day) or, at four annas per day, for 49,000 rupees This represents the labour of two thousand men for 98 days And all this is exclusive of the cost of quinine, hospital establishments and medical comforts

On investigating the causes of this disease one notices that in 1902 the least malarial month was February with seven inches of rain, that the admissions increased slightly in March (110 inches of rain), much increased in April (373 inches), further increased in May (rain 1265) till they reached a maximum in June (2132 inches rain) In July (98 inches rain) there was in nearly all districts a decline in the malaria, more or less marked, whilst in August and September, the two wettest months of the year (2885 and 2624 inches respectively), the admissions for fever sharply declined

These statements also apply for the two previous unhealthy years 1900 and 1901, but more especially to the larger stations and districts Ross and Female Jail show variations and do not conform to this

The table here inserted shews precisely for the last year how the monthly malarial admissions have occurred in the various areas and what the rainfall has been

* I believe this is the first case of congenital absence of spleen in a man who lived to the age of 24 years

MALARIAL ADMISSIONS.

Approx. strengths	Average Rainfall	Ross	Abordeen	Haddo	Female Jail	Wimberley Ganj	Southern District
		700	2,200	1,800	400	2,350	3,500
January 1902	0 12	15	24	67	21	313	218
February	7 28	12	13	41	20	232	109
March	0 53	22	41	52	20	287	312
April	1 93	33	61	85	19	472	608
May	18 59	31	147	156	34	626	793
June	21 47	35	372	312	192	738	817
July	16 19	75	310	253	196	620	484
August	33 65	39	172	129	123	460	279
September	24 83	27	129	109	80	354	211
October	9 44	37	153	77	85	278	212
November	10 95	58	158	98	84	219	186
December	5 38	67	98	51	53	225	242
January 1903	0 31	70	70	40	66	186	185
February	4 61	53	49	35	49	200	180
March	<i>Nil</i>	67	88	54	33	310	213

The rainfall is the average of the whole Settlement. In 1902 Ross was the wettest station.

There are two methods in which we may attempt to account for the prevalence of malaria.

(a) The purely mosquito theory

(b) The relapse or recrudescence theory

(a) *The purely mosquito theory* This would require infection from a specific anopheles to account for every attack of malaria, and the malarial admission rate should be coincident with a marked increase in mosquitoes, or at least, with more favourable conditions for their existence. Now, our malaria begins in April, the hottest and one of the driest months. It increases and reaches its maximum in June and then declines irrespective of the rainfall. This feature is constant.

If mosquitoes are *solely* responsible for our malaria they must be of a type which flourishes in the hot month of April, and the wet ones of May and June, suddenly dying off in July and subsequent months, although these months, from conditions of temperature and moisture, would appear to be equally suitable for their development. More than this, the number of malaria cases from which the mosquitoes may become infected is much greater in May and June, and consequently the number of infected and dangerous mosquitoes should be much larger. With more infected mosquitoes the malaria rate should rise, but it undoubtedly falls. (It has been suggested to me that the mosquitoes themselves become so ill from malarial poisoning that they too die off. This theory is ingenious, but it is hardly practicable to investigate it.)

Also it may be that in July other mosquito-eating insects and animals appear who prey upon

the Culicidæ, and so enormously reduce their numbers.

If we can exclude mosquitoes does malaria diminish? It does, most decidedly. For the past fifteen months careful experiments have been carried out in the Female Jail, one of the most unhealthy and malarious units in the Settlement. This experiment was initiated by Major Anderson and has since been extended by me.

Thirty-seven women selected from all classes were placed under mosquito curtains, going under them at dusk and coming out in the morning. Their occupation, health and food in no way differed from any other section of the Jail. The remainder of the Jail population was divided into two classes. To one class 20 grains of quinine were given in two successive days, to the other no prophylactic issue was made. The effect was most marked.

Class A mosquito net 1,007 admissions per mille

" B quinine 2,421 " " "

" C no quinine 4,177 " " "

I believe the class A figures would have been better, but for an unfortunate case of chicken-pox in one of the women which necessitated a change in the inhabitants of a second net which had just been occupied.

These figures go to show that under conditions prevailing in the Female Jail the exclusion of mosquitoes is an effectual and inexpensive method of reducing malaria.

(b) *The relapse or recrudescence theory of malaria* This theory is somewhat heterodox nowadays, but it has some grounds for consideration.

To begin with, practically every native who comes to the Andamans has suffered from malaria in his youth, and probably has had several attacks of fever. He has not become immune, or he would not suffer from malarial fever. The malarial parasites are supposed to be locked up in the spleen, and if in favourable conditions, will be eventually destroyed there. But it is a matter of common knowledge that, in the case of a person who has once suffered from malaria, a chill, over-exposure, &c, will induce a fresh attack, even years after the original infection, and that a malarial subject should avoid circumstances where he is likely to be so exposed. Now, as I have said above, most natives have suffered from malaria, and on arrival here as prisoners they are subject to new and trying conditions. The climate, water, and food are strange to them, they are worked hard and of are constantly exposed to sun, rain and wind. Differing from free men they cannot, if feeling only slightly unwell, leave work for a day or two, change their food or take life a little easily. They must either work on or go sick to hospital, with the possibility of not being admitted and the risk of punishment.

(To be continued)

A CASE OF TRANSPOSITION OF VISCERA RECOGNISED DURING LIFE DEATH FROM
MALARIAL FEVER *POST MORTEM*—TOTAL CONGENITAL ABSENCE OF SPLEEN

By R D SAIGOL, F R C S EDIN, LIEUT, I M S



FIG 1



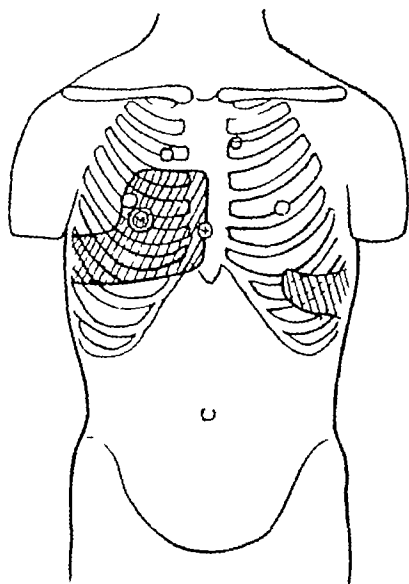
FIG 2



FIG 3

A CASE OF TRANSPOSITION OF VISCERA RECOGNISED DURING LIFE
DEATH FROM MALARIAL FEVER *POST MORTEM*—
TOTAL CONGENITAL ABSENCE OF SPLEEN

By R. D. SAIGOL F.R.C.S., EDIN., LIEUT. I.M.S.



(a) DURING LIFE

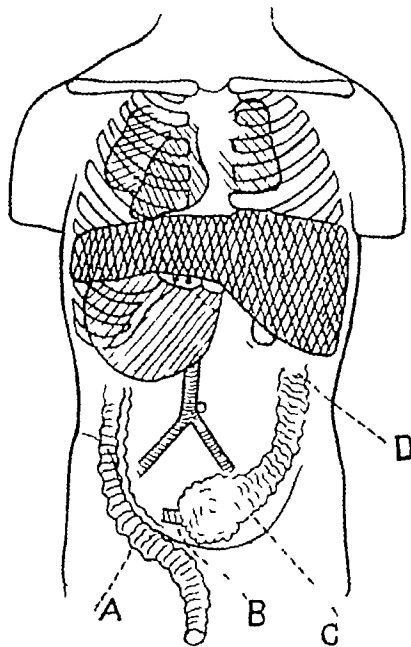


Fig IV

(b) AFTER DEATH

- (a) Sigmoid Flex
- (b) Small Intestines.
- (c) Caecum
- (d) Glands along lesser curvature

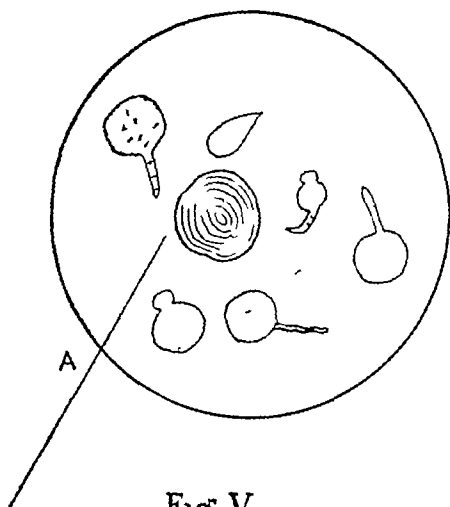


Fig. V

- (a) Red cells to give an idea of the sizes
- The rest are different forms of parasites seen

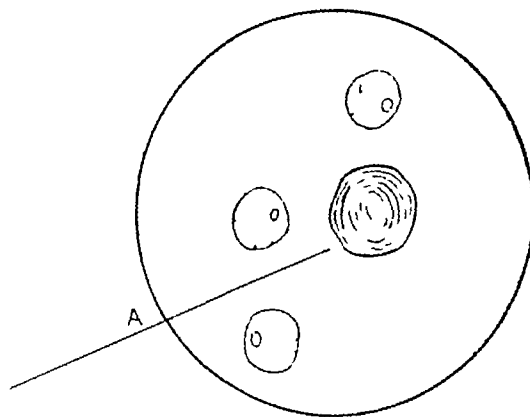


Fig VI

- (a) Red cells to give an idea of the sizes
- The rest are different forms of parasites seen

THE
Indian Medical Gazette.

NOVEMBER, 1903

DISEASES OF THE LIVER IN INDIA

OWING to the paucity of papers contributed this issue can scarcely be called a special number on hepatic disease in India. Nevertheless there is much interesting material in what has been received. In describing his operative experience of hepatic abscess, Captain W. J. Niblock, R.M.S., points out that this disease is not so common in Madras as is generally supposed. This conclusion is based on the records of the General Hospital in Madras, where only 154 cases have been operated on during the past ten years, which gives an average of little more than fifteen operations per annum. Amongst his own cases he observed that the patients all recovered in whom the single abscess contained less than twenty ounces of pus. It may be taken as an axiom that the greater the destruction of liver tissue, the less is the chance of recovery.

Just as there is an irreducible minimum beyond which the body-weight cannot fall without a fatal result in cases of emaciation from disease or starvation, so, in like manner, there is a limit for the loss of liver cells, and if this limit is exceeded death assuredly results in spite of all medical or surgical treatment. In these cases there is little or no improvement after operation, the abscess continues discharging copiously, the patient remains gaunt and emaciated, bedsores form in spite of all precautions, his much-taxed strength slowly ebbs away day by day, literally he is "dying by inches," and eventually he succumbs in the course of a month or two.

In many parts of India the surgical prognosis of liver abscess in hospital varies to some extent according as the patient is in comfortable circumstances and intelligent, or poor and ignorant. Only too frequently natives of India put off having recourse to hospital until the abscess has become very large and life has been rendered almost insupportable. They die of death in hospital, and yet they count it by delaying until hopelessly late. In these cases the diagnosis is just as easy as the prognosis is bad. On the other

hand, Europeans in India usually come early under observation, so much so that it is often an extremely difficult problem to decide whether the case has gone on to abscess formation, or even to settle precisely when one is warranted in exploring the liver for pus, which frequently eludes detection owing to its small quantity or its unsuspected site.

Captain Niblock dispenses with preliminary suture of the liver to the abdominal parietes in cases where adhesions do not exist, or where the pleural cavity has to be traversed. He prefers to trust to gauze-packing as a more reliable procedure. In amoebic abscesses he thinks benefit does accrue from washing out the cavity with a 1 to 60 or 1 to 80 quinine solution. He lays particular stress on the propriety of exploration of the liver for abscess being performed only when the operation for the evacuation of pus can be proceeded with immediately, while the patient is still on the table and under the influence of the anæsthetic. In support of this he cites some due results from the extravasation of blood or of pus along the tracks of the exploratory punctures made by the physician prior to the case being handed over to the surgeon. We can corroborate his experience, and recollect being much impressed by a case seen many years ago in India. A skilful physician in a large hospital diagnosed a liver abscess in a young woman, and forthwith proceeded to confirm his opinion by exploratory puncture, but he failed to find pus. General peritonitis followed, and the case was transferred to one of the hospital surgeons for laparotomy and washing out of the peritoneal cavity. When the abdomen was opened, pus was observed issuing from a couple of the previous exploratory punctures, which had almost reached the site of the abscess in the first instance, and the pus had afterwards broken down the slight intervening barrier, and had made its way along the tracks of the trochar into the general peritoneal cavity.

This anomaly of considering a liver abscess as a medical case in the large hospitals of India is an anachronism which dies hard. Why should a liver abscess be classed and treated as a medical case up to a certain point? Why should a liver abscess not be admitted directly into the surgical wards just as much as a case of appendicitis, of strangulated hernia, of mastoid abscess, or of pus in the knee-joint? The precise stage at which a liver abscess ceases to

be a medical case, and becomes one for the surgeon, varies with the views of the individual physician. Not unfrequently valuable time is lost to the detriment of the patient.

Captain Gordon Tucker, I.M.S., records the rather unusual occurrence of two cases of primary cancer of the liver being admitted into one of the Bombay hospitals both within the same month—September of this year. He also describes three specimens of the same pathological condition which are in the museum of the Giant Medical College. Last year we treated a case of the nodular variety of primary hepatic cancer in a middle-aged European lady who had spent most of her life in India. The growth caused marked enlargement of the organ anteriorly and inferiorly, was accompanied by intense icterus, and for a considerable time was associated with very little pain or distress. Later on the growth seemed arrested in front, the jaundice became very much less and the motions had a return of bile pigment, but the growth appeared to be making rapid progress posteriorly, where it fastened on some of the intercostal nerves and caused severe neuralgia. The case was followed for over a couple of months, and was then lost sight of owing to a transfer, but the patient was getting steadily worse when last seen.

Captain S. Anderson, I.M.S., gives an interesting account of a curious epidemic of catarrhal jaundice which occurred amongst the prisoners of Buxar Jail during May and June of this year. The etiology of this disease was obscure, the only contributory factors mentioned in the paper being the intense heat at the hottest part of the year, and the prevalence of severe malarial fever as an antecedent during March and April. Assistant-Surgeon A. K. Chowdhry describes very fully a jail jaundice observed by him at Port Blair in the Andamans which he considers to be a complication or sequela of malarial fever, either intermittent or remittent in type. The cases appear either to terminate favourably, as in all of the Buxar cases save one, or they get suddenly and acutely worse. These fatal cases (1) may become semi-comatose and sink, (2) hæmorrhage may supervene, or (3) sudden syncope may occur.

Major Calvert, I.M.S., contributes notes on sudden and fatal collapse in a case of biliary colic occurring in a prisoner in the Mymensingh Jail. It may be noticed that he does not refer to gall-

stones being a rare affection in Bengal. That is also our experience, for we have seen not a few cases of gall-stones amongst the natives of Lower Bengal, and during the past twelve months four cases amongst Europeans in and near Calcutta. This is decidedly a contrast as compared with the extreme rarity in Madras which Captain Niblock describes.

Major Grant, I.M.S., in his paper lays particular stress on the importance of cold or chill as a disease factor in the liver and other abdominal viscera, and that it has to be taken into consideration over and above any specific amœba of malaria or of the colon.

Lieutenant-Colonel D. G. Crawford, I.M.S., has compiled specially for this number a list of papers and books written on diseases of the liver by officers of the Indian Medical Service from the year 1772 up to the present time. It contains the names of Cheever, Fayrer, the Goodeves, Maclean, Moore, Morehead, Murchison and Waring.

THE TREATMENT OF YELLOW FEVER

Lieutenant James Carroll, Professor of Bacteriology at the Army Medical School, U.S.A., has contributed an interesting paper to the *Journal of the Association of Military Surgeons*, in which he gives a digest of the literature on the treatment of yellow fever. Sternberg's treatment is specially mentioned as reducing the mortality of this disease from 20 or 25 per cent to about 7.5 per cent. This consists in the administration of small doses of perchloride of mercury ($\frac{1}{10}$ th gr.) with bicarbonate of soda (grs 7) in a couple of ounces of water every hour. With this is combined a hot mustard foot-bath given very early, cold sponging and ice to the head, sinapisms over the epigastrium and lumbar region, diaphoretics, no food for the first three days, after which small quantities of iced champagne or brandy may be given, as well as milk with lime-water.

Lieutenant Carroll draws his deductions for treatment from the pathological lesions that occur. There is a powerful toxin in the circulation, which acts with the greatest intensity on the liver, producing congestion, cloudy swelling, granular and fatty degeneration with some cell necrosis. The increased pressure and obstruction in the portal vein reacts on the portal circulation, and tells specially on the duodenal and pyloric veins, which are the

shortest and have least communication with other vessels. Hence the pain and tenderness on epigastric pressure which is so early and constant a symptom in yellow fever. The same gastro-intestinal hæmorrhages, black vomit or bloody evacuations occur in totally different conditions where there is serious damage to the liver, *eg*, advanced cirrhosis, acute yellow atrophy, acute phosphorus poisoning, fatty degeneration and other conditions. The stress of the toxin is chiefly on the liver and to a less extent on the kidneys. Lieutenant Carroll thinks that the supposed uræmia is chiefly the result of the loss of function of the liver, hence a deficiency in the organic ammonia compounds which the liver normally converts into urea, hence a deficiency in urea, and hence suppression of urine because the kidneys no longer get urea, which is their normal stimulus for secretion. Lieutenant Carroll recommends the administration of urea by the mouth, or hypodermically, in order to cause the kidneys to secrete freely, and he cites the use of urea as a diuretic by the older French physicians, by Prof Maunthner of Vienna, and by Dr Tanner of London.

The first and most urgent indication is to eliminate the toxin through the various excretory channels, by diuretics, diaphoretics and saline cathartics, and to do this as soon as possible. The hot mustard pediluvium, or bath, is specially recommended if given quite early in the case, also an early dose of calomel, rhubarb and soda. Follow this up by several one drachm doses of sulphate of soda at intervals of one hour, until the bowels are freely moved, and Tonatre's plan of giving a tablespoonful of sulphate of soda in a pint of warm water, as an enema night and morning regularly, is commended. Symptoms must be treated, nausea by sinapisms and crushed ice, headache by ice, fever by cold affusions, thirst by milk and lime-water, carbonated Vichy water, or neutral effervescent drinks. If the stomach is too irritable, tepid water injections by the bowel are of use, and to the water may be added bicarbonate, sulphate, or chloride of sodium.

During the first three days he recommends that all food should be withheld, except a little milk and lime-water, or milk and Vichy water, and a very little iced champagne. Inunction of olive oil, and large doses of olive oil given by the mouth when the stomach will tolerate the

oil, are favourably mentioned as easily absorbed and nutritious. Animal foods are forbidden, and in their places are substituted toast-water, barley, rice, and sago or hominy water. Above all, good nursing is essential for successful results in this disease.

BRITISH MEDICAL ASSOCIATION MEETING, JULY 2ND—31st, 1903

SECTION OF TROPICAL DISEASES *

IN the original arrangements for the British Medical Association Meeting of this year the Tropical Diseases Section was omitted, but fortunately it was subsequently restored to the list, as probably more important advances are being made in this department of medicine than in any other. The indecision thus shown probably accounts for the paucity of papers received by the section from India and other places abroad, as by the time the programme of the Tropical Section reached distant parts, there was very little time left for the preparation of papers in time to be sent home for the meeting. Nevertheless, the section was a very interesting one and well attended. As usual these special subjects for debate were introduced by selected authorities on the respected subjects and gave rise to good debates.

On the first Section Meeting on July 29th Professor W J Simpson, formerly Medical Officer of Health in Calcutta, introduced the subject of the disposal of sewage in the tropics in an able paper. He advocated a system of drains for large towns with traps into which the contents of latrines, etc., could be emptied at various points, thus avoiding its carriage for long distances through the streets, in small places he considered that the sewage should be applied to the soil and described the careful way in which the Chinese thus utilised all their sewage for the fertilization of the soil. Captain Leonard Rogers then read a short paper on the action of the septic tank process on pathogenic bacteria, describing a series of experiments carried out in Calcutta by adding various pathogenic bacteria to the effluent of the septic tank, which had first been freed from bacteria by passage through a porcelain filter. The typhoid bacillus was found in much reduced numbers in this street effluent kept under anaerobic conditions up to the third day, but not afterwards, while those of cholera,

* Specially communicated by a correspondent

dysentery and Malta fever disappeared before the third day under these conditions. A third paper by Dr Andrew Duncan on the Disposal of Sewage in the Tropics was also read, in which he dealt with the trenching system, etc. A good discussion followed, in the course of which the following spoke—Dr Fernandez of Ceylon, Dr Cleike of Barbadoes, who gave an example of typhoid fever breaking out one year after the application of infected stools to the soil, on its then being turned up for cultivation purposes. Fleet Surgeon Bassett Smith, who referred to the dangers of the spread of intestinal parasites through the application of their ova to the land in faecal matter, Professor Sandwith of Cairo, who had not found well-cared-for cesspits as dangerous as might have been expected in Cairo, Dr Sambon, who objected to such vegetables as are used uncooked in salads being grown on trenching grounds, Dr Christy, who spoke on the danger of flies carrying infection from sewage, Dr Cantlie, who asked for a definition of the septic tank; and Dr Nuttall, the President of the Section, who referred to the infection of typhoid in the American camps by flies and its cessation on closing all the sewage tanks, etc.

A paper was then read by Fleet Surgeon Bassett Smith on Spine, in which he laid stress on the marked anaemia occurring in the disease of the pernicious type with high haemoglobin value and the presence of megaloblasts, and advocated its treatment by iron, arsenic, bone marrow, and ox bile pills and salol. In the discussion Sir Patrick Manson said he had got better results in this disease latterly by changing the diet from milk to fruit, or meat juice or pure meat diet, if the case was not improving on milk alone. Dr Goodly referred to some researches he was engaged on with regard to spine, with as yet no very definite results which he could yet report, and gave interesting details of his work, and some others also spoke.

Dr Christy then read a paper on the entry of the spore into the red-corpuscle with illustrations of the different stages which he had observed.

July 30th.—On the second day Sir Patrick Manson opened the discussion on *Trypanosoma* fever in the human subject, an epitome of which appeared in the *British Medical Journal* before the meeting in accordance with the new rule. He was not prepared to accept this organism as the proved cause of sleeping sickness

as it might be only a concomitant, but he admitted that the *Flagellum Perstans* was not the cause, as he had formerly suggested. He thought that many obscure fevers in India and elsewhere and specially *kala-azar* might be due to the *Trypanosoma*. He then gave a summary from memory of a paper which had been sent him for the meeting by Dr E Dutton of the Liverpool School, who had recently returned from working at *Trypanosoma* fever in West Africa the original paper having been unfortunately mislaid. Dr Dutton had found the *Trypanosoma* without great difficulty, and in the fever cases which it produced, and they were not at all of a fatal nature although often chronic. Animals, such as goats, rats and guinea-pigs were only inoculated with some difficulty. All ages were affected, and often no serious disease resulted from the presence of the parasite. The organism (which Dr Dutton kindly showed the writer in Liverpool) is much smaller than that of surra and tsetse-fly disease. The spleen may not be at all enlarged. A paper was then read by Dr Christy on Sleeping Sickness in Uganda, in which he proved that the disease extended a long distance beyond the zone in which *Flagellum Perstans* occurred, so that this could not possibly be the cause of the disease, and he gave much valuable information as to the location and spread of the disease. Dr Christy also read an interesting communication on Human Tick Fever in Uganda.

A good discussion followed, in which Dr Castellani spoke of his discovery of the *Trypanosoma* in the cerebro-spinal fluid of cases of sleeping sickness and subsequently also in the blood, and regarded it as the most probable cause of the disease, while the streptococcus formerly found by him he now looked on as a terminal complication such as occurs also in tsetse-fly disease. Dr S C Low also spoke of his work on sleeping sickness in Uganda. Captain L Rogers referred to the constant and pathognomonic occurrence of melanotic pigmentation of the organ and skin in *kala-azar*, from which it derived its name of "Black Fever," as in his opinion conclusive evidence against this disease being due to a *Trypanosoma*, as these organisms never produced melanine in the blood. Sir Patrick Manson in his reply objected to the last conclusion that the melanine might only be an accidental concomitant in *kala-azar*, and stated that the endemicity of the

disease differed widely from that of malaria in that it rarely affected children, but on appealing to Captain Rogers to support this statement he was met by the reply that in the villages affected children were much the most commonly affected. He appealed for careful examination for *Trypanosoma fever* in all tropical countries. A paper was then read on cases of liver abscess by Fleet Surgeon Bassett Smith and Mr Cantlie, the former advocating strongly the open method of operation, which is nearly always adapted in India, and the latter speaking just as favourably of the cannula and drainage tube. Captain L. Rogers read a paper on a case of biliary abscess of the liver with an operation for removal of the gall-stones and drainage of the abscess. A brief discussion on liver abscess ensued.

July 31st.—On the third day Mr Jonathan Hutchison opened the discussion on Leprosy with an able speech on his fish theory, and appealed eloquently to the meeting to declare the disease to be non-contagious, and such prisons for lepers as that at Robin Island and Cape Colony to be indefensible in view of our present knowledge of the disease. Dr Abraham supported the conclusion that leprosy was not easily contagious, but thought food if received from lepers might produce the disease. He objected to the term *de novo* as an explanation of its origin and could not accept the fish theory. Professor Sandwith referred to places in the Soudan in which he had been credibly informed that the disease occurred, although no fish was obtainable, but Mr Hutchison related that he had often been told this of other places, but had always found fish when he went to them, and expressed himself ready to examine any such supposed cases submitted to him.

A paper was then read on Lathyrism by Major Hendley, L.M.S., based on his recent experience in the Central Provinces, and specimens of *kesari dal* were shown. One on Varicelloid Varicella in Trinidad by Dr J. Dickson and Dr C. F. Lassalle gave rise to some discussion by Dr Clerke and others, the hybrid term being objected to, and the protective effect of vaccination being regarded as proof that the disease was only a mild form of small-pox. Dr Fernandez then read a paper on malaria and its prophylaxis in Ceylon, dealing with the application of modern methods in that island, and, lastly, Mr Cantlie read one on plague in

domestic animals, dealing with Professor Simpson's researches in Hong-Kong, and pleaded for more attention being paid to the possibility of the disease being conveyed through infected pigs, fowls, etc., and less exclusive attention to the rats. A vote of thanks to the President and officers of the section terminated a very successful meeting, which should suffice to prevent the Section of Tropical Medicine being omitted in future years as long as the present rapid progress in this department is maintained.

LONDON LETTER

THE SLEEPING SICKNESS OF UGANDA

It looks as if the mystery of this mysterious disease were about to be unravelled. In a former letter I referred to the work of the Portuguese Commission and of Dr. Aldo Castellani, which seemed to indicate the association of a diplococcus with the disease. On the 12th of November 1902, Dr Castellani found a living *Trypanosoma* in cerebro-spinal fluid removed by lumbar puncture from a case of sleeping sickness. He proceeded to examine 34 cases by the same method and found the *Trypanosoma* in 20 cases, or 70 per cent. An examination of 12 cases of other diseases including three of *Trypanosoma fever* in the same way gave negative results. The matter was then taken up by Lieutenant-Colonel David Bruce, F.R.C.S., B.A.M.C., and Dr David N. Nabarro, who had been deputed by the Royal Society to investigate sleeping sickness, and arrived at Entebbe, Uganda, on the 16th of March of the present year. These gentlemen have submitted a progress report which has been published by the Royal Society, in which are detailed facts tending to confirm Dr Castellani's discovery and to throw additional light on the causation of this deadly malady. The detection of the parasite in cerebro-spinal fluid is not easy, but by following Dr Castellani's technique important positive results were obtained. The organism was found in every one of 40 cases examined, and in all stages of the disease. Fifteen subjects suffering from various other diseases were examined with negative results. The question next arose whether the organism existed in the blood of cases of sleeping sickness, and as a result of 16 examinations it was found in all but one instance. The discovery of a *Trypanosoma* in the blood of both natives and

Europeans was made some time previous to these researches, and when confined to the blood the organism gives rise to symptoms which I described in a previous communication, and which are denoted in this report as those of *Trypanosoma* fever—quite a different condition from sleeping sickness. The question, therefore, arises whether the organism found in the blood of the former is the same as that found in the blood and cerebro-spinal fluid of the latter, or whether the same organism existing in the blood only gives rise to symptoms “of *Trypanosoma* fever,” whereas when it obtains access to the cerebro-spinal fluid, it causes sleeping sickness. The relation between the presence of the organism in the latter and streptococcus invasion which is still maintained to be a phenomenon of it, especially in the later stages, is also a question. Further research is needed to clear up these points, but behind these questions lies another and more important one, namely, is the infection conveyed by some species of biting insect—say of tsetse fly as in the case of Nagana? The geographical area of the disease is limited and definite, and the more recent enquiries of Lieutenant-Colonel Bruce indicate that a species of tsetse fly is peculiar to the affected districts, and experiments on animals point to the probability of the *Trypanosoma* being carried from an infected to a healthy subject by this agency. The subject is thus one of extreme interest, and the investigation which I have endeavoured to summarise add an important chapter to the great theme of micro-parasitology. In this connection it is interesting to note that a Commission organized by the Liverpool School of Tropical Medicine is about to proceed to West Africa for the purpose of investigating the subject of trypanosomiasis which will, no doubt, contribute materially to the elucidation of what are now moot points in *Trypanosoma* infection.

PHYSIQUE

Are we as a nation maintaining our physical stamina, or is there, especially in the lower social strata and particularly in towns, a process of physical deterioration in progress? Such is the question which is at present agitating the public mind somewhat acutely. The issue was raised by a paper contributed to the *Contemporary Review* in January last by Sir Frederick Maurice in which he stated a very pessimistic view of the results of recruiting for

the army. He stated and commented on the fact that only two out of five men enlisting remain in the army as effective soldiers at the end of two years' service, or in other words, that 60 per cent of the men offering themselves for enlistment are physically unfit to complete their colour service. He pointed out that the causes of rejection were mostly such as betoken physical degeneracy. The theme was taken up warmly by the press, medical and lay, papers on the subject were read at the meetings of the British Medical Association and the British Association for the advancement of science, an important discussion was held on the subject in the House of Lords, the Director-General of the Army Medical Department prepared a very clear and able memorandum on the question from the recruiting point of view. This was referred to the Royal Colleges of Physicians and Surgeons for consideration and report, and now a committee of experts has been appointed by the House of Commons to investigate the whole matter. Director-General Taylor's figures do not indicate that within the last ten years any noteworthy evidence of physical decadence has taken place in recruits except as regards their teeth. This may mean a sign of physical degeneracy or an outcome of more care and strictness in examining and appraising the condition of the teeth. It is argued that sanitary laws and reforms have caused the survival of weaklings, and that the improvement of the environment has resulted, not so much in bettering the general health and physique, as in enabling those to live who would formerly under less favourable surroundings have died. It is also urged that the migration into towns which has been such a marked feature of our recent national life has subjected the industrial and labouring class to deteriorating influences. These and cognate questions will be examined and weighed by the committee whose report will be awaited with keen concern. Meantime looking to the attention which is being paid to physical education in schools and the place which sports and outdoor recreations occupy as occupations and pastimes in classes, it cannot be said that the improvement of physique in growing subjects is being neglected.

THE SERVICES

The recent Entrance examinations for the Royal Army Medical Corps and Indian Medical Service have given great satisfaction. For the

R A M C, 72 candidates competed for 30 vacancies. The full number was obtained, and the men are reported to be of the "highest professional training." Several have served the office of house physician and house surgeon in their hospitals, and in every respect the result of the examination contrasted favourably with past times. For the I M S there were 41 candidates, of whom 29 were pronounced qualified. The number of vacancies was 16 and the qualifications held and marks gained by the successful competitors prove that they are of excellent stamp and well fitted to maintain the high reputation of the old service. Proposals submitted by the Government of India for improvements in the Indian Medical Service are now under consideration at the India Office, and the results will be promulgated within a month.

THE R A M C

The successful candidates at the recent examination commenced their studies in the R A M C on the 1st of September, and after two months' instruction the R A M C men will proceed to Aldershot for a three months' course of training, and the I M S men to Netley for two months for the purpose of studying tropical diseases, and being initiated in the duties of Army Medical officers. The first senior courses in the R A M C have come to a close, and all the officers who attended it passed the examination. Out of 26 officers attending this course, 22 qualified in special subjects. Thirty officers are at present undergoing instruction, general and special, in and in connection with the Royal Army Medical College.

K McL

17th September, 1903

LITERATURE ON DISEASES OF THE LIVER, BY I M S OFFICERS.

LIEUTENANT-COLONEL D G CRAWFORD, I M S, has furnished the following list of works on the liver and its diseases by officers of the Indian Medical Service—

Cayley, H (Bengal, 1857—1887)—Article on "Tropical Diseases of the Liver," in Davidson's "Hygiene and Diseases of Warm Climates" Edinburgh and London Young J Pentland, 1893

Conwell, W E (Madras)—"A Treatise on the Liver," 1835

Crawford, John (Surgeon of the Earl of Middlesex East India man)—"An Essay on the Nature, Cause, and Cure of a disease incident to the Liver, hitherto but little known, though very frequent and fatal in hot climates" Kearsley, London, 1772

Fayer, J (Bengal, 1850—1873) with T Lauder Brunton, edited, third edition of Murchison's "Diseases of the Liver," 1885

Articles in Davidson's "Hygiene and Diseases of Warm Climates," 1893, on—

"Tropical Liver Diarrhoea,"

"Tropical Liver Abscess"

FitzPatrick, Thomas (Bengal, 1856—1859)—"Chronic Diseases of the Liver," 1856.

Gibbons, J B (Bengal, 1881 to date)—Article on "The Morbid Anatomy of a Form of Biliary Cirrhosis in Children in India"—in "Scientific Memoirs by Medical Officers of the Army of India"—Calcutta, Office of Superintendent of Govt Printing Part VI, 1891

Girdlestone, T (Madras)—"On the Hepatic and Spasmodic affections in India" London, 1787

Goodeve, E (Bengal, 1841—1866)—Articles in "A System of Medicine" Edited by J Russell Reynolds, 3 Vols Macmillan & Co, London, 1866, 2nd Edition, 1870—(all in Vol III), on—

"Jaundice"

"Biliary Calculi"

"Chronic Atrophy of Liver, Cirrhosis"

"Acute Yellow Atrophy of Liver"

Maclean, W C (Madras, 1838—1860)—Articles in Russell Reynolds "System of Medicine," Vol III, on

"Congestion of Liver"

"Suppurative Inflammation of Liver"

"Gangrenous Inflammation of Liver"

MacLeod, A C (Madras)—"Alcoholic Diseases, Jaundice, Diarrhoea, Dysentery, and Cholera"

MacPherson, John (Bengal, 1839—1866)—Article in Quain's "Dictionary of Medicine" Longmans, Green & Co 2 Vols, 1882 (1st Edition), on

"Inflammation of Liver"

Murchison, Charles (Bengal, 1853—1855)—Translation of "Clinical Treatise in Diseases of the Liver," by F T Frerichs 2 Vols 8vo New Sydenham Society H K Lewis & Co, London, 1860-61

"On Functional Derangements of the Liver" (Croonian Lectures) Crown 8vo Smith, Elder & Co., London, 1874

"Clinical Lectures on Diseases of the Liver, Jaundice and Abdominal Dropsy" Longmans, Green & Co, London, 1867 Second Edition, 1877, including the "Lectures on Functional Derangements of the Liver" Third Edition, edited by T Lauder Brunton and J Fayer, 1885 Fourth Edition, edited by W Caley, 1894 Translated into French by Jules Cyr, Paris, 1878

Poole, G K (Bengal, 1855—1876)—"Thesis on the Connection of Hepatic Abscess with Dysentery"

Sutherland, J S (Bengal, 1834—1846)—"Mercury in Fevers, Dysentery, and Hepatitis, as they occur in India, and with reference to Lesions in mucous surfaces and glandular structures" MacLachlan and Stewart, Edinburgh, 1846 8vo pp 95

Waring, E J (Madras)—"Enquiry into the Statistics and Pathology of some points connected with the Abscess in the Liver, as met with in the East Indies," pp 206 Trevandrum, 1854 Second Edition Smith, Elder & Co, London

In addition to the above, a number of works on Tropical Diseases in general of course include those of the Liver among others. The chief are—

Morehead, C (Bombay)—"Clinical Researches on Disease in India, 2 Vols 8vo London, 1856

Goodeve, H H (Bengal, 1831—1853)—and *Birch, E A* (Bengal, 1866—1893)—"Hints on Children in India," 1st edition, privately printed, 15th March 1844 Seventh Edition, Revised and rewritten by E A Birch Thacker, Spink & Co, Calcutta, 1879

Chevers, N (Bengal, 1848—1876) — 'A Commentary on the Diseases of India' J and A Churchill, London, 1886

Moore, W J (Bombay) — A Manual of Family Medicine and Hygiene for India London, J and A Churchill, 1861

Maclean, W E (Madras) — "Diseases of Tropical Climates" Macmillan & Co, London, 1886

Short, John (Madras) — "Manual of Family Medicine for India" Higginbotham & Co, Madras, 1876

ON THE PHYSIOLOGICAL ACTION OF THE POISON OF THE HYDROPHIDÆ

By CAPTAIN L ROGERS, I M S

"On the Physiological Action of the Poison of the Hydrophidæ Part II—Action on the Circulatory, Respiratory, and Nervous Systems" By LEONARD ROGERS, M D, B S (Lond), M R C P, F R C S, I M S, late Acting Professor of Pathology, Medical College, Calcutta. Communicated by Dr A D WALLER, F R S Received June 6,—Read June 18, 1903

Read before the Royal Society, London
(From the Physiological Laboratory of the University of London)

In my previous paper I dealt with the action of the poison of the Sea snakes as far as it was possible to examine it under the conditions of work in Calcutta, and reserved the consideration of certain questions until I was able to test them with the aid of a well equipped laboratory. This I have now been able to do in the Physiological Laboratory of the London University by the courtesy of Dr A D Waller, with results which appear to be worthy of being placed on record in a further paper

Blood Pressure and Respiratory Curves

The effect of the poison on the blood pressure and on the rate and amplitude of the respirations have been studied by taking tracings of the former by a Gad's manometer and of the latter with Sandström's recorder, large but varying doses being administered intravenously in chloroformed cats and rabbits. The results uniformly showed a primary failure of respiration followed by a marked rise of blood pressure with the increasing venosity of the blood, respiratory convulsions (except when the respiratory failure was extremely rapid), and a final sudden fall of blood pressure some minutes after complete cessation of respiration. The general results obtained may be conveniently summarised in the following table —

No	Animal	Dose per kilo	Respiration falling	Blood pressure rising	Respiration ceased	Convulsions ceased	Blood pressure fell rapidly
		mgm	min	min	min	min	min
1	Cat	1	0	8	12	8	10
2	Rabbit	1	3	0	0	10	15
3	Rabbit	2	2	4	0	0	10
4	Cat	2	8	4	(7)	(10)	(22)*
5	Rabbit	4	1	1	2	Nil	5

* Artificial respiration

In the fourth experiment the onset of convulsions and the final failure of the circulation, as evidenced by the sudden fall in blood pressure, were both

delayed, by the use of artificial respiration. With this exception, it will be seen from the table that both the respiration and the circulation fail more and more rapidly as the dose of the poison is increased, until with a dose of 4 milligrammes per kilo weight ($1/250,000$ of the body weight) the respiration was affected in 1 minute and had entirely ceased in $2\frac{1}{2}$ minutes, while the circulation failed in $3\frac{1}{2}$ minutes. The exact sequence of events can be best illustrated by the data and tracings of the following two typical experiments, being Nos 3 and 5 in the above table

Experiment 3

Rabbit, weight $1\frac{1}{2}$ kilos., under chloroform Canula in the carotid artery, connected with a Gad's manometer. Respirations recorded with Sandström's instrument 3 milligrammes (2 milligrammes per kilo weight) of dried Enhydrina poison injected into the external jugular vein dissolved in 0.75 c.c of 0.9 per cent NaCl

TIME	Blood pressure in mm Hg	Respiration per minute	Amplitude of respiration	REMARKS
Before injection	92	51	mm 4	
After 1 min	89	50	4	
" 2 "	91	49	$3\frac{1}{2}$	
" 3 "	91	46	3	Respiration falling
" 4 "	140	43	$2\frac{1}{2}$	Blood pressure rising
" 5 "	160	39	2	
" 6 "	180	31	1	Convulsions beginning
" 7 "	200	21	$\frac{1}{2}$	Respiration ceased.
" 8 "	195	0	—	Convulsions violent.
" 9 "	160	—	—	
" 10 "	90	—	—	Blood pressure falling
" 11 "	70	—	—	

Experiment 5

Rabbit, weight 1.7 kilos., under chloroform. Conditions the same as in the above experiment, except that 6.8 milligrammes (4 milligrammes per kilo weight) was given intravenously

TIME	Blood pressure in mm Hg	Respirations per minute	Amplitude of respiration	REMARKS
Before injection	115	43	mm 4	
After $\frac{1}{2}$ min	115	41	4	
" 1 "	115	38	1	Respiration falling
" $1\frac{1}{2}$ "	120	32	$\frac{1}{2}$	Blood pressure rising
" 2 "	135	22	$\frac{1}{2}$	
" 3 "	110	—	—	Respiration ceased
" $3\frac{1}{2}$ "	82	—	—	Blood pressure falling

Both the curves of the two experiments above detailed show the same sequence of results, viz.,

primary failure of respiration accompanied by a rise of blood pressure, followed by a fall of the same some little time after the respirations have entirely ceased. There is one remarkable and important difference between them, namely, an entire absence of respiratory convulsions in the case of the last very rapid poisoning. This absence of convulsions may be due to the respiratory centre being so rapidly overwhelmed by the relatively enormous dose of poison injected direct into the circulation (for the amount used amounted to some 200 times the minimal lethal dose for a rabbit), that the centre was paralysed completely before the failure of the breathing had had time to render the blood sufficiently venous to produce respiratory convulsions. The comparatively slight rise of blood pressure occurring with the failure in respiration in this case, as compared with comparatively large rise obtaining in the other four experiments, agrees with the explanation just suggested.

Another possible explanation must, however, be considered, a paralysis of the end-plates of the motor nerves, which, as we shall see presently, is a marked feature of the action of the poison under consideration, might cut off the peripheral muscles from the action of the respiratory centre, in spite of its overstimulation by venous blood. In order to test this possibility, the right leg, exclusive of the sciatic nerve, was ligatured before the poison was injected in Experiment 5, and the response of the nerves and muscles of both limbs to the interrupted induced current was tested immediately after the death of the animal with the following result—

	Distance of secondary coil	Contraction of muscle
Protected limb, nerve	45 mm	Good
„ muscle	45 „	Good
Poisoned limb, nerve	0 „	Nil
„ muscle	45 „	Good

Here we have a typical curara effect, the end plates of the poisoned limb only being completely paralysed. In this experiment it is therefore impossible to say how far the absence of convulsions is due to this cause and how far to failure of the respiratory centre. I shall return to this point further on after the experiments on the action of the poison on the nerves have been related.

Direct Action on the Heart

The next question to be dealt with is whether the poison of the *Enhydrina* has any direct action on the heart, which is so marked a feature in the case of *Pseudechis* poison,* and has also been noted in a less marked degree by Brunton and Fayrer,† when large doses of Cobra venom are introduced directly into the circulation. In small doses, subcutaneously administered, Cobra venom has very little action on the heart, which can be kept going for many hours after spontaneous respiration has ceased by means of artificial respiration, as shown by the Indian Snake Poison Commission.‡

I have examined this point by testing if the poison has any paralyzing action on the heart of a pitbed frog, tracings being taken of the contraction of the

organ before and after the direct action of solutions of the poison of various strengths in normal saline solution. As a few drops of a 1-in-1000 solution of *Enhydrina* poison given *per venam*, and therefore further greatly diluted in the circulation, is very rapidly fatal, it is evident that the poison should produce a very marked action on the heart when directly applied to it if the lethal effect is in any degree due to cardiac paralysis. My experiments have shown that such is not the case, for a 1-in-1000 solution when directly applied to a vigorous frog's heart produced no appreciable effect in any of several trials, a 1-in-100 solution, similarly applied on two occasions, did not retard, still less arrest the action of the heart.

Effect of Artificial Respiration on the Blood Pressure and the Heart

The absence of any direct paralytic effect of *Enhydrina* poison on the heart was also shown by an experiment of another kind. As already mentioned, the heart can be kept going by artificial respiration for a very long time in Cobra poisoning, but this is not the case with poisoning with the venom of the *Pseudechis*, C. J. Martin§ has shown that the heart fails within a very few minutes after cessation of spontaneous respiration in spite of artificial respiration in the case of the last-named snake poison which also has a marked direct paralytic action on the heart. In the following experiment artificial respiration was started directly marked failure of respiration appeared, and the blood pressure had begun to rise, and the effect of repeatedly stopping and recommencing it on the blood pressure was noted.

Experiment 4

Cat, 3½ kilos, under chloroform. Canula in the carotid artery connected with a Gad's manometer. Respirations recorded with a Sandstrom's instrument. 7 milligrammes (2 milligrammes per kilo weight) in 175 c.c., 0.9 per cent NaCl injected into the jugular vein.

After the final failure of the circulation the sciatic nerves were tested with an interrupted induced current, and stimulation of both the nerves and the muscles directly caused contractions, showing that the smaller dose of poison used in this experiment had not caused paralysis of the end plates, although after the final cessation of artificial respiration no convulsions followed the rise in blood pressure. This points to complete exhaustion of the respiratory centre, occurring before paralysis of the end plates, having been the cause of the absence of terminal convulsions.

The repeated lowering of the blood pressure and disappearance of the commencing convulsions following immediately upon the performance of artificial respirations go to show that the rise of blood pressure, and the convulsions are secondary in nature to the paralysis of the respiratory centre, and due to the increasing venosity of the blood. Further, it is evident that the poison has no powerful direct paralyzing effect on the heart itself, as is the case with *Pseudechis* venom. The result of the above experiment is also of interest in connection with one by Vincent Richards in which a dog was bitten

* 'Roy Soc of New South Wales Proc,' 1896

† 'Roy Soc Proc,' Vols 21, 22 and 23

‡ 'Indian Medical Gazette,' 1873, p. 119

by an Enhydrina, and artificial respiration was kept up for 24 hours and 35 minutes after the failure of respiration, sensibility being restored, and at the same time convulsions recurred, pointing to partial recovery of the respiratory centre from the condition of complete paralysis. Death finally occurred by accidental arrest of artificial respiration. In his experiment the dose given was a small one, as respiration did not cease until after two hours, but it is evident that the poison exerted no injurious action on the heart.

Time	Blood pressure	Respirations*		Remarks
		No	Amplitude	
Before injection	Mm		Mm	
After 1 min	160	28	7	
" 2 "	160	29	6½	
" 3 "	160	27	5½	
" 4 "	160	24	4	Respirations beginning to fall
" 4½ "	170	16	2	Blood pressure beginning to rise. Artificial respiration commenced
" 6½ "	150	—	—	Blood pressure fallen again. Artificial respiration stopped
" 7½ "	170	—	—	Blood pressure risen again. Artificial respiration resumed
" 7½ "	118	—	—	Blood pressure fallen again. Artificial respiration stopped again
" 8½ "	180	—	—	Blood pressure risen again. Artificial respiration resumed again
" 9½ "	130	—	—	Blood pressure fallen again. Artificial respiration stopped again
" 9½ "	185	—	—	Blood pressure risen higher than previous. Convulsions commenced. Artificial respiration resumed
" 11½ "	140	—	—	Convulsions stopped. Blood pressure fallen again. Artificial respiration stopped again
" 12½ "	195	—	—	Blood pressure risen. Convulsions recommenced. Artificial respiration resumed
" 13½ "	160	—	—	Convulsions stopped again. Blood pressure fallen again. Artificial respiration stopped
" 15½ "	198	—	—	Blood pressure very high. Febrile convulsions. Artificial respiration resumed
" 18½ "	140	—	—	Blood pressure fallen again. Artificial respiration finally stopped
" 21 "	190	—	—	Blood pressure high again, but no convulsions
" 22½ "	105	—	—	Final fall of blood pressure beginning
" 24 "	70	—	—	

Action on Nerves and End Plates

Brunton and Fayrer first showed that Cobra venom exerts a paralyzing action on the muscles and plates like curara, this was confirmed by Ragotzi, and the last mentioned observer attributed the failure of respiration to paralysis of the end plates of the diaphragm. We have already seen (experi-

ment 5) that a similar motor nerve paralysis may result from Enhydrina poisoning, so that it is necessary to inquire whether this is due to an effect on the nerve trunk or on the end plates. If the nerve trunk is itself poisoned so as to lose its power of conductivity then the negative variation of the current of injury should be greatly reduced or entirely abolished by very dilute solutions of the venom. This has been tested by Dr Waller's method by placing the sciatic nerves of frogs in dilute solutions of the venom, and measuring the negative variation of the current of injury with a galvanometer both before and after exposure to the poison. The nerves were first placed in 0.83 per cent NaCl for about two hours, this strength having been found recently by Dr N H Alcock (to whom I am indebted for much help throughout this investigation) to be the optimum one for nerves.

The poison was used in strengths of from 10.6 to 10.3, and the nerves were exposed to their influence for from 1—5 minutes in the case of the stronger solutions, and up to one hour in the weaker one, but with entirely negative results. In one experiment a 1 per cent solution was used up to five minutes without any poisonous effect on the nerve being produced, although this is a stronger solution than I have ever used for injection. It is evident, then, that the poison of the Enhydrina does not produce paralysis by any direct action on the nerve fibres.

That it does act by paralyzing the muscle end plates, as in the case of Cobra venom, is shown by the following experiments on etherised frogs.

Frog Weight 20 grammes. Letherised. Right thigh ligatured excluding the sciatic nerve. 0.2 milligrammes Enhydrina poison in 0.2 c.c. 0.9 per cent NaCl injected into dorsal lymph sac (10 milligrammes per kilo = 20 minimal lethal doses).

Respirations per minute

Before injection	56	5th min	19
1st min	68	6th "	7
2nd "	61	7th "	9
3rd "	50	8th "	0
4th "	32	9th "	0

Respirations finally ceased. Heart still beating four hours later. After cessation of respiration the frog was pithed, and when the spinal cord was destroyed, the ligatured (protected) limb only showed contraction of the muscles. Both the sciatic nerves and leg muscles were then tested with the interrupted faradic current with the following results —

	Distance of secondary coil	Contraction of muscle
Protected limb, nerve	40 mm	Good
muscles	30 "	Good
Poisoned limb, nerve	0 "	Nil
muscle	30 "	Good

This is a typical curara effect, and on proceeding to test the negative variation of the current of injury of the sciatic nerves of each limb after placing them in 0.83 per cent NaCl for two hours both nerves were found to give it well, that of the poisoned limb being slightly the stronger of the two, probably owing to partial drying of that of the protected limb over the ligature.

The above experiment was repeated with a dose of 5 milligrammes per kilo weight, with a precisely

similar result, including the presence of the negative variation of the current of injury in each sciatic nerve. In two more experiments doses of 5 and 1 milligrammes per kilo respectively were injected without previous ligaturing of a limb, and in both cases stimulation of the nerves of each limb caused no muscle response, although they contracted when directly stimulated. In each case both nerves showed well marked negative variation of the current of injury, proving that their conducting powers were intact, so that it is clear that the end plates must have been paralysed.

Action on the End-plates of the Phrenic Nerves

The marked action on the motor end plates of the poison of the *Enhydrina* once more brings it into line with that of Cobra venom, but, on the other hand, constitutes a marked difference from *Pseudechis* venom, which C. J. Martin* showed had no such action. He also found that the stimulation of the phrenic nerves still produced normal contraction of the diaphragm after total cessation of respiration due to the latter poison.

In order to ascertain how far the paralysis of respiration produced by *Enhydrina* venom is due to paralysis of the respiratory centre, and how far, if at all, to poisoning of the motor end plates of the phrenic nerves, the following experiments were performed.

Cat, weight $3\frac{1}{2}$ kilos, under chloroform. Tracheal canula connected with a recorder inserted. Left phrenic nerve exposed in the neck, $3\frac{1}{2}$ milligrammes of *Enhydrina* poison injected into external jugular vein (1 milligramme per kilo). Phrenic nerve stimulated by an interrupted induced current at intervals of one minute.

Time.	Blood pressure.	Respirations per minute	PHRENIC NERVE		REMARKS
			Coil at	Contraction of diaphragm	
Before injection	150	46	25 mm only	Good	
After 3 min.	145	41	"	"	
" 6 "	169	87	"	"	
" 9 "	170	17	"	"	
" 12 "	170	10	"	Slight	
" 14 "	160	8	"	Slight	
" 16 "	160	8	20 "	Slight	
" 17 "	100	Convulsions	15 "	Slight	Respirations nearly ceased phrenics weakened
" 18 "	100	Do	10 "	Good	
" 19 "	100	Do	0 "	Nil	Phrenics completely paralysed Blood pressure falling

Occasional feeble inspirations produced by movement of the chest walls only, continued up to the 24th minute, when they finally ceased. At the 27th minute the final rapid fall of blood pressure to 50 mm took place. The sciatic nerves were tested at this point, and the right when stimulated with the secondary coil at 30 mm produced a good muscular response, as did the left with the secondary coil at $27\frac{1}{2}$ mm. It appears from this that the phrenic

nerve was paralysed completely before any very marked loss of function of the sciatic nerves had taken place. The respirations, however, were very greatly reduced in both frequency and amplitude several minutes before any weakening of the phrenics had occurred, so that the first and most important action of the poison appears to be its effect on the respiratory centre, although the paralysis of the phrenics speedily ensues and is a very important feature of the action of the venom. If a very large dose is given, as in Experiment 5, then the end plates of the muscles in general are also paralysed at the same time or very soon after the failure of the respiratory centre and the phrenics.

The above experiment was repeated in a rabbit, with a precisely similar result to that just detailed, the respiratory centre failing first, quickly followed by paralysis of the phrenics, although the diaphragm still responded to direct excitation. The muscles of both limbs (one of which was ligatured before the injection of the poison) contracted well immediately after death to both direct stimulation and that through the sciatic nerves. In this experiment the respirations failed very rapidly, ceasing at the end of two minutes, and no convulsions ensued, in spite of the motor end plates not being paralysed, so that in this instance the absence of convulsions could not be due to muscular paralysis, but only to complete paralysis of the respiratory centre.

In the case of Cobra poisoning Brunton and Fayrer showed that the spinal cord is paralysed from below upwards, the hind legs being first affected. C. J. Martin also found that a direct poisonous action on the spinal cord was produced by *Pseudechis* venom.

In order to test this point a frog was etherised, and after a ligature had been tied round the right thigh, excluding the sciatic nerve, a dose of 5 milligrammes per kilo of *Enhydrina* poison was injected into the dorsal lymph sac, and the reflexes induced by stimulating the skin of different parts of the body with an interrupted induced current with the secondary coil of 5 mm were observed. Respiration finally ceased at the end of 40 minutes. The sequence of events as regards reflexes was as follows. During the first 25 minutes, stimulation of the left foot produced contractions in both the legs and arms, as did also stimulation of either arm, showing that the reflexes were intact. After $27\frac{1}{2}$ minutes stimulation of the left foot still produced good movement in the arms, as well as in the legs, but stimulation of an arm now produced only a feeble movement of the legs. After 35 minutes, stimulation of the left leg produced only feeble movement in it, although the right (protected) limb still responded well, the motor end plates in the poisoned limb being now partially paralysed, stimulation of one arm now produced no movement of the poisoned leg, but both arms contracted well. After 40 minutes, in addition to the conditions just noted, it was found that when the current was applied to the eye directly, movement occurred in all four limbs, showing that a powerful stimulus still produced a cord reflex. When, however, the current was applied over the lower end of the vertebral column, the legs only contracted, and when applied over the dorsal region the arms only moved, showing

* Virchow's Archiv, Vol 122

some impairment of the functions of the spinal cord as far as conduction in its long axis was concerned.

On stimulating one arm, however, both upper limbs contracted, showing conduction transversely in the upper part of the cord still persisted. After 45 minutes the transverse conduction had also disappeared, for stimulation of one upper extremity only caused contraction of the irritated limb, and not of the opposite one, although when the electrodes were placed over the upper cord itself both limbs responded. On applying the electrodes to the eye directly at this stage, the protected limb contracted well, and the three poisoned ones feebly only, while $7\frac{1}{2}$ minutes later this powerful stimulus produced a reflex action of a very feeble nature in the protected leg only. The heart was still beating, but respiration had ceased for some minutes, the animal being quite flaccid, and apparently dead, the nerve trunks of the limbs were now exposed, and stimulated directly, to ascertain how far the end plates were paralysed, with the following results. The muscles of all four limbs still responded to direct stimulation. The sciatic nerve of the left (poisoned limb) gave no response at all with the secondary coil at 0. That of the right (protected limb) responded with the coil at 15 mm. On testing the arm nerves, contractions were produced with the coil at $7\frac{1}{2}$ mm, but not at 10 mm, showing only partial paralysis of the end plates of the arm muscles at a time when those of the poisoned lower limb were completely paralysed, an important point which must be taken into account in considering how far the changes in the reflexes detailed above can be taken as evidence of loss of function of the spinal cord, as apart from the affection of the motor end plates. The loss of the transverse reflex in the upper cord when the motor end plates of the muscles of the upper extremities were not paralysed, points to a diminution of the reflex functions of the spinal cord. On the other hand, the marked reflex contraction of all four limbs on applying a strong current to the eye just after respiration had ceased, shows that the reflex functions of the cord were not abolished at this period, although they rapidly declined within a few minutes of complete respiratory paralysis, as would be expected. The less rapid affection of the motor end plates of the upper extremity, as compared with those of the lower limbs, accounts for the ascending paralysis apart from any interference with the functions of the spinal cord itself.

We must conclude, then, that the respiratory paralysis is complete before the reflex functions of the spinal cord are abolished, although they may be diminished at an earlier stage, so that the action of Pnhydina poison on the spinal cord itself is of quite secondary importance as compared with the paralysis of the respiration, and of the motor end plates of the muscles.

Conclusions

1 In lethal doses, Pnhydina poison has no direct depressing action on the heart. The marked rise in blood pressure observed is secondary to failure of respiration, producing venosity of the blood.

2 The primary action of the poison is the production of a respiratory paralysis by a direct action on the respiratory centre, this being very quickly followed by paralysis of the end plates of the phrenic nerves.

The latter may occur at a time when the sciatic nerves show no end plate paralysis.

3 The poison has a very marked action in paralysing the end plates of motor nerves, but does not perceptibly affect the conducting powers of the nerve trunks themselves. In this respect it resembles cobra venom and curara.

4 Its action on the reflex functions of the spinal cord is slight, and altogether secondary in importance to its influence on respiration.

Review

An Atlas of Illustrations of Clinical Medicine, Surgery and Pathology—Compiled for the New Sydenham Society (a continuation of the "Atlas of Pathology"), Fasciculus XIV (Double Number), Fasciculi I and II of New Series, Framboesial Syphilis (Yaws and Parangi). Plates I to II and LXXV—XCI. London, The New Sydenham Society, Agent H. K. Lewis, 136, Gower St., W.C. Price to non-members one guinea.

These fasciculi deal with yaws or as the author prefers to call it framboesial syphilis. In Part I the disease is described under the headings of 'primary sore, secondary and tertiary stages'. This description is good and is supplemented by a number of excellent black and white illustrations, the question as to whether yaws, parangi, coko, &c., are one and the same disease is also discussed.

Part II consists of a large number of coloured engravings of the disease, with case histories, as it occurs in Ceylon, prepared from drawings of Sir William Karsky, these are of a high standard of excellence.

The author acknowledges that these fasciculi are of a controversial nature, and at the end of Part I states his own opinion that "yaws," "parangi" and framboesial syphilis are caused by syphilis modified in the case of yaws, &c., by climate and race. He quotes a large number of authorities in favour of this view, but we cannot help thinking that sufficient prominence is not given to Powell's* work which, to our mind, proves that syphilis and yaws are two distinct diseases, no doubt showing similarities, but very less well-marked than in many other diseases which nobody doubts are dissimilar. This is scarcely the place to enter into a long controversy on the subject, but we must take exception to one statement of the author, *ie.*, that in tropical countries syphilis spreads very commonly as a non-venereal disease, the primary sore being on the limbs or trunk, this being the carriers of the virus, this is not our experience in India.

To mention one apparently very strong point in favour of the view that the diseases are dissimilar, is that a large number of cases of yaws occurs between the ages of two and fourteen, *ie.*,

* Powell, *J. H. G.* Vol. XXXII, page 465.

before active sexual life begins and later than the usual time of appearance of symptoms of inherited syphilis. Again Powell* has seen cases in which the patient has contracted a hard chancre with the usual sequelæ whilst still suffering from jaws.

Elementary Bacteriology—By M. L. DINGRA, M.D., C.M. Published by Longmans, Green & Co. Price, 3s.

THE author's aim in this little book is to deal in a concise manner with the fundamental principles of bacteriology, and to so select and arrange the material at his disposal as to meet the requirements of Indian students and practitioners.

The book is arranged in two parts. Part I contains chapters on the Theory of Spontaneous Generation, Fermentation, the Morphology of Bacteria, Putrefaction, Antiseptics and the Preservation of Food Stuffs.

Part II deals with the different Bacteria in Disease.

There are two appendices, one on the principles of Bacteriological Technique, and one on Snake Venom and Antivenomous Serum.

When it is seen that the book is comprised of about 140 pages of fairly large print, in which number are included twenty-six illustrations, it must necessarily follow that the twenty-six chapters and the two appendices into which it is divided are extremely brief. In fact each chapter consists of little more than mere scraps of information about the subject with which it deals.

So far as it goes the material it contains is fairly accurate, but we do not consider it at all sufficient to meet the ordinary requirements of Indian students and practitioners.

We have nothing but praise for the way in which the publishers have done their work, the type and paper being excellent.

The plates and illustrations, most of which are copies of illustrations from other works on Bacteriology, are very well selected, and add considerably to the value of the book.

EXTRACTS FROM MEDICAL JOURNALS

MEDICINE

The Clinical estimation of the blood pressure and its great value in cases of Cerebral Compression—In the *Journal of the American Medical Association* of May 2nd, 1903, there is an article by Dr. Henry Wireman Cook, in which is a description of a manometer for the clinical estimation of the maximum blood pressure, that is the pressure required to obliterate the radial pulse by compression of the brachial artery. It consists of a mercurial manometer connected with a Y shaped tube, one arm of the Y being attached to an extensible rubber bag which completely encircles the arm about its middle, so that "the pressure is thus transmitted equally through the medium of the tissues to the

artery, perpendicular to its wall at every point." To the other arm is attached an air pumping bulb as is used for a Paquelin's cautery. By means of this the pressure is raised till the radial pulse disappears. The height of the mercurial column is noted. On the cessation of pumping the pressure in the apparatus begins to fall owing to escape of air, and the pulse will again appear at the wrist. The height of the mercury is again noted, and the mean of the two readings is taken as the maximum blood pressure. The apparatus having been fixed on, the two readings are completed in the 30 seconds required for the pulse count. The instrument can be obtained from Messrs. Eimer & Amend, 205 211, Third Avenue, New York City, in two forms—for hospital or private use.

An interesting illustration of the sphere of usefulness of this instrument is furnished in *The American Journal of the Medical Sciences* for June, by Dr. Harvey Cushing, in an article entitled "The blood pressure reaction of acute cerebral compression, illustrated by cases of intra cranial hæmorrhage." The paper brings into line much experimental work on animals with what has been recognised clinically. He shows that when the cerebral compression is severe enough to cause symptoms it is accompanied by an increase in blood pressure, which may rise to nearly three times the normal (in one case it rose from 130 mm, the normal, to 360 mm), and that later this rise gives place to a fall which continues till it terminates in death. His point of view is that the rise of blood pressure is due to the compressing force causing extra vascular pressure on the capillaries of the vaso motor centre in the bulb sufficient to narrow their lumen and produce partial anæmia. This anæmia of the vaso motor centre produces, as bulbar anæmia always does, general arterial constriction. The resultant rise in general arterial pressure will force the blood through the capillaries of the bulb against the increased extra-vascular pressure. It will, at the same time, be likely to force out of the torn vessel any clot which is plugging it so that bleeding may begin again. This will produce further rise of intra cranial pressure, further anæmia of the vaso motor centre, further vaso constriction, and further rise in blood pressure, and the consequent restoration of the circulation through the capillaries of the vaso motor centre. The rise in blood pressure is terminated, either by the cessation of bleeding, in which case with the slow absorption of the clot there will be a gradual fall in blood pressure, or by a continuance of the bleeding till the tired out vaso motor centre is unable to respond to the stimulus of anæmia and fails, the accompanying vaso dilatation being accompanied by a rapid fall of blood pressure. By this time the vaso motor centre is so exhausted that it will not respond even if the compression is relieved. In accordance with Kocher he divides the stages of cerebral compression as follows—

First Stage—The compression is slight, and is compensated for by the escape of cerebro spinal fluid and some narrowing of the venous channels. The symptoms are insignificant.

Second Stage—The compression causes some cerebral anæmia, shown by headache, vertigo, restlessness, excitement or drowsiness. The compression of the larger venous channels inside the skull is shown by venous congestion of the veins outside the skull opening into them, recognised by dilatation of the veins in the fundus of the eye, the "eye-grounds" as he calls them. Bulbar anæmia is shown by slowing of the pulse, but this may not be enough to cause a rise in blood pressure.

Third Stage—The stage in which the symptoms are characteristic, the blood pressure is rising, and its rise may or may not be able to keep the bulb from becoming anæmic. The periodicity of symptoms such as Cheyne Stokes respiration, and the varying size of pupil is

* Powell, *I. M. G.*, vol. xxxii, page 365.

explicable as resulting from rhythmical variations of blood pressure, those which cause Traube Hering curves

Fourth Stage—A falling blood pressure with deep coma and irregular heart and respiration and wide pupils

The variations in blood pressure are shown by charts, from actual cases illustrating the different stages. Their usefulness as an aid in determining whether operation was necessary (in cases which admitted of it) must have been very considerable, and it appears that this instrument is likely to have an important clinical future. There is one important physiological point which has not been touched upon in the article and which is of great importance, it depends on the fact that no vaso motor nerves have been demonstrated in the brain their absence being confirmed by the reversal of the Traube Hering curves in that organ. In the absence of a local vaso motor apparatus for the brain, the general blood pressure is an index of the blood flow through the cerebral vessels, in a way in which it is not in any other part of the body. Accordingly we cannot expect the instrument to give us the same kind of information in any other part of the body. This is very far from saying that the information, though different in kind, may not be equally useful. One more point seems worth touching on, namely, whether the sudden fall in blood pressure is due really to failure of the vaso motor centre or to dilatation and failure of the left ventricle from inability to keep up the circulation against such enormous arterial pressure. This is an important practical point can only be settled by plethysmographic experiments on animals. In this connection it is interesting to note that in one case Dr. Cushing tried the effect of the intra venous injection of adrenaline chloride, he could raise the blood pressure by its means to a safe level, but its only effect (in a case actually under operation) was to renew bleeding.

In the *Therapeutic Gazette* for June a paper by Drs. Isaac Ott and S. B. Harris gives details of the physiological action of this drug. They note that adrenaline chloride increases the force and rapidity of the heart's beat, causes first cessation and later strengthening of the respiration, a primary arrest followed by increased force of the intestinal movements, dilatation of the pupil, and a rise in temperature, it is excreted by the kidneys. Its effect on the vaso motor centre was apparently not tried. In the absence then of knowledge as to whether the sudden fall of blood pressure in the late stage of cerebral compression is due to cardiac or vaso motor failure, and an equal ignorance as to how far the raising of blood pressure by adrenaline chloride is due to these two factors, its use in these cases must be purely empirical.

Acetozone in Typhoid Fever—A paper by Drs. Flavel Woods and Thrush in the same journal gives a list of 53 presumably consecutive cases of typhoid fever treated by acetozone without a death. All the cases gave Widal's reaction and some of them were very severe. His conclusions are that the drug is a valuable intestinal antiseptic, lessening the tendency to typhinitis and diarrhoea, so that the stools are less offensive, though not otherwise altered. It does not appear to act on the circulation, respiration, or kidneys, hyperpyrexia is rare, and relapses are rare when it is used till convalescence is fully established.

CLAYTON LANE, M.D.

SURGERY

Acute Recurrent Hydronephrosis—Len (*Medical Chronicle*, May 1903) describes four cases of the condition, all being characterised by recurrent attacks of acute abdominal pain, with swelling of the pelvis and temporary hydronephrosis. A cure was obtained in each instance by nephropexy, combined in three cases with evacuation of the renal pelvis. The condition may be found in association with mobile kidney, and in

these cases it is assumed to be produced by sudden torsion or kinking of the ureter, or by interference with the vascular supply to the kidney. On the other hand, extreme mobility of the kidney frequently exists without any evidence of hydronephrosis, so that some additional factor is necessary for the production of the condition. The well known 'gastric crises' of movable kidney are not usually accompanied by any evidence of distension of the pelvis of the kidney, and are probably due to interference with the vascular and nervous structures at the hilum of the kidney, causing acute renal congestion, and sympathetic gastro intestinal irritation.

The onset of severe pain was quickly followed by the development of a tense swelling in the hypochondrium, which on aspiration was found to contain urine. Aspiration gave immediate relief, the attack returning after a time without any definite cause. During the interval between the attacks the kidney was not abnormally movable except in the second case, in which the condition existed more or less for six years.

The causes of ureteral obstruction are numerous. M. Bazy, of Paris, has found that out of 68 cases of ureters of newborn children only 15 could be considered normal, all the others showing folds, kinkings, narrowing or torsion to some degree. These folds and narrowings appear to have their origin in the wall of the ureter itself.

From a study of casts Bazy is of opinion that the voluminous renal pelvis is the one most liable to changes in shape and size, owing to alterations in the position of the kidney. Bazy draws attention to the great facility with which pyonephrosis occurs in these cases. These researches seem to show clearly that recurrent nephrosis, whether acute or chronic, usually depends on a congenital disposition of the ureter and renal pelvis, the most likely form being a voluminous renal pelvis of horizontal type with the ureter opening at an acute angle.

Suture of blood-vessels—Burgess (*Medical Chronicle*, May 1903) reviews the present position of opinion and the change that has taken place. Hubbard (*Boston M. and S. Journal*, March 1902) recorded the early history of the subject showing that the fear of aneurism or thrombosis prevented the extension of the practice. Jassinowsky in 1891 demonstrated that suture of vessels without thrombosis necessarily resulting was possible in animals. His sutures passed through the middle and outer coats only of the vessel. Murphy in 1897 introduced the method of invagination for cases in which the arterial wound involves more than half of the circumference of the vessel. Dörfler has proved experimentally that sutures may be passed through the entire thickness of the walls of the vessel, and that the fear of hemorrhage from stitch holes, and thrombosis from the presence of foreign substances were groundless. Halstead in 1901 sutured the axillary artery, the sutures passing through the outer coats only—the radial pulse being equal on both sides two months later.

Pringle successfully sutured a stab wound of the external iliac artery, Deprige an accidental wound of the common carotid, the sutures passing through the two outer coats. In a case reported by Delbet the sutures were passed right through the walls of the external iliac artery. Eight months after no pulsation could be felt in the superficial femoral, although present in the common femoral.

The method is only applicable to the larger vessels and is especially serviceable when there is reason to fear that gangrene will follow ligation. It must be possible to control the distal and proximal circulation at a distance from the wound sufficient to allow of the necessary manipulations. When the suture is completed the distal clamp (Crile's pattern) being removed first.

The principle of arteriography has received an interesting application to the cure of spontaneous aneurisms (R. Matas, *Annals of Surgery*, February 1903). In the fusiform variety all the openings into the sac are closed by suture from within the sac, while in the sacular variety an attempt is made to suture the

orifice of the sac without occluding the lumen of the parent vessel. In large sacs, where there is an abundance of material, the first line of sutures should be protected by a similar row of sutures, similarly passed, and serving at the same time to diminish the size of the sac. The closure of the aneurismal space is accomplished by turning the relaxed flaps of skin into the interior of the cavity, the principle being similar to that of closing bone cavities with cutaneous periosteal flaps. The flaps can be readily made to meet at the bottom of the cavity and kept in place by a few fixation sutures. Mats has made a further suggestion in the treatment of fusiform aneurism—namely, to re-establish the lost arterial channel by inserting a soft indiarubber tube in the two orifices of communication and suturing over it a fold raised on each side of it. The tube is withdrawn by tying the middle sutures last.

Pressure-pouches of the œsophagus—Butlin (*British Medical Journal* July 11th) narrates eight cases of this condition in detail pointing out the great difficulty in introducing a bougie into the stomach owing to the displacement of the œsophagus from the middle line by the pouch. The bougie passes a distance of about nine inches from the teeth and is stopped at the end of the pouch. The pouch was most carefully exposed in the neck so that it could be lifted upwards. By this manoeuvre the chief difficulty of the operation was got over—the difficulty of passing a bougie into the stomach in order to define the œsophagus before removal of the pouch. The mouth of the sac was ligatured in all cases, and the external wound stitched and drained in the earlier cases. If the sutures of the sac give way and food passes out by the wound, it is important to measure the quantity that escapes to compare it with that taken by the mouth in order to find out how much actually reaches the stomach. The earlier cases starved at first from lack of this precaution.

The symptoms of the condition are return of fragments of food at a considerable interval which may be more than a day,—gurgling up of gas from the throat especially on pressure on the left side of the neck,—arrest of the bougie at a distance of nine inches from the teeth. Pressure symptoms as cough. Wasting when the pouch attains a large size. Acidity of the returned food does not in the least contra-indicate the presence of a pouch. The patient must be fed with a soft tube, a guide being passed each time if necessary.

The less the tissues about the pouch are interfered with the better, since if they are widely opened up cellulitis is very liable to occur. No attempt should be made to close the external wound, no matter how carefully the mouth of the sac has been stitched up. It is desirable to suture the mouth of the sac as, even if the sutures give way, time has been given to the surrounding tissues to be sealed up by the exudation.

R B

DISEASES OF WOMEN AND CHILDREN

The following abstract is taken from the *Medical Press* of a paper on Chorea in Pregnancy read by Drs Wall and Russell Andrews before the Medical Society of London.

The paper is based upon an analysis of forty cases hitherto unreported, of chorea occurring in pregnant women who were patients at the London Hospital, the notes having been kindly placed at the disposal of the authors by the physicians responsible.

The movements of a choreic patient are akin to those usually employed in the expression of the emotions. In the evolution of voluntary movement in the child a controlling power develops which modifies and orders the movements which, in the earliest stages, are purely emotional. There is strong ground for the supposition that choreic movements represent a reversion to an ante-

cedent state in the scale of development resulting from the partial or total suspension of this lately acquired power of control.

This removal of control is probably due to a paralytic lesion affecting certain of the highest cortical centres, such a lesion could be explained by any of the theories which associate themselves directly with chorea, and also, perhaps, with greater probability, by the theory that it may be produced by any debilitating condition acting upon centres which from their recent development are still in an unstable condition, the greater number of cases being para-rheumatic.

The great diminution in power to control the emotions, which forms so marked a feature in chorea, is also to be explained by the same hypothesis.

There is in pregnancy a tendency towards attacks of true chorea which are distinguishable in their clinical characters from the chorea of childhood.

Conditions, therefore, which determine chorea in childhood are likely to produce a similar condition during pregnancy. Rheumatism in very many cases plays a prominent part in the etiology, out of 37 patients there was a history of definite antecedent rheumatism in 16, and 12 more had had chorea in childhood without any other rheumatic manifestation. In all, 23 out of 37 patients had previously suffered from chorea, this large proportion may be explained on the supposition that there is a definite rheumatic taint, or that the occurrence of one attack leaves the centres in an unstable condition and liable to be again overthrown by slight compulsion.

In the chorea of childhood the majority of cases occur in association with a high grade of mental development, yet some are found in children showing signs of mental deficiency and frequently also stigmata of physical maldevelopment, in the first group a history of rheumatism is common, in the second group it is frequently absent.

In pregnant women suffering from chorea similar groups are found. A case is quoted in which the predisposing cause seems to be a defective cerebral development associated with microcephaly.

The determining cause of chorea in pregnancy is usually mental worry, often determined by the fact of pregnancy, thus single women worry over an illegitimate pregnancy, married women may be troubled by the "res angusta domi." The onset of movements at or about the time of quickening in a large proportion of the cases, suggests the nature of the determining cause. Sudden shocks may also be the immediate cause of chorea, instances of this are quoted.

The loss of the power of control in chorea may not only find expression in the physical irregular overaction, but sometimes also in emotional outbreaks, in some instances reaching to a degree of mania, or melancholia. Intellectual insanity (paranoia) is infrequent in chorea.

Conclusions

Chorea in pregnancy is determined by mental worry, overstrain, or shock acting upon a brain of which the controlling power is lowered by pregnancy and the original stability is subnormal, owing to antecedent rheumatism or chorea, or because it has never reached the normal standard of development.

Analysis of 40 cases of chorea in pregnancy occurring in 37 patients

Chorea occurred in the first pregnancy eighteen times. In ten cases the first pregnancy was not attended with chorea, but chorea occurred in later pregnancies.

In six cases chorea recurred in subsequent pregnancies.

There was a previous history of chorea in ... 23

There was a previous rheumatic history without chorea in .. 5

There was no previous chorea or rheumatic history in .. 9

Apparent cause in these nine cases — Shock, two, husband out of work, one, secondary syphilis, one, unexplained, five

Month in which movements began

1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9
4	6	5	8	6	6	2	2
10 %	15 4 %	13 %	20 %	15 4 %	15 4 %	5 %	5 %

There were five fatal cases, five patients out of 37 were single women

The authors show that the tendency to spontaneous abortion has been exaggerated. The proportion of cases in which spontaneous abortion occurs is very little if at all higher than it is in ordinary pregnancy, i.e., 16.6 per cent, or 20 per cent according to different authorities. Attacks of transitory emotional insanity are probably common, and are not of great prognostic significance. In subsequent pregnancies there is not necessarily chorea. Treatment consists of quiet, full feeding, freedom from worry and anxiety, and sleep if necessary assisted by drugs, of which chloral and chloralamide are the best. Light massage is very useful in some cases. Induction of abortion is seldom indicated, and cannot be looked upon as a certain or safe method of treatment.

A remarkable case of Multiple Pregnancy is recorded in the May number of *The Medical Press* by Drs Wishart Kerr and Cookman, Medical Officers, West African Medical Staff, Accra, Gold Coast.

On Sunday, April 19th, 1903, we were called to see a native woman of Accra, Gold Coast, West Africa, who was reported to have given birth to six children. On arriving at her house we found an excited crowd in the street outside, which had to be held in check by a strong detachment of police. On entering, we found the woman lying on the floor, as is the usual custom in native deliveries. In a corner of the hut there were six newly born infants, we had them brought to the light to examine them and verify the case. We then had them photographed. Five of the children were boys and one was a girl. Between them all there were four placentae. The girl and one of the boys had a placenta each. The remaining four children were attached by twos to the two placentae. Each placenta was delivered immediately after the birth of the children to which it was attached. The woman was four hours in labour and the births followed one another rapidly. On the 21st instant one child died, on 22nd instant four of the children died, on 23rd the sixth child, which was a girl, died. Shortly after the children's birth the mother appeared very much exhausted, but ultimately made a complete recovery. On inquiry we ascertained that at her first confinement she gave birth to four children, at her second and third confinements to three children each time. These, with her last litter, make a total of sixteen children for four confinements. Has a similar case ever been recorded?

Double Gestation in the Left Fallopian Tube

E. FERRONI (ZENTRALBL F GYN, FEB 28, p 275)

A woman, aged 32, who had always menstruated regularly in the intervals of her seven pregnancies, had had amenorrhoea for three months, and latterly also irregular hæmorrhage. Her pregnancies and labours had been normal, with the exception of the last, a year ago, which was followed by pyrexia and pain in the left iliac fossa. About a month after the first period had been missed she suffered from intermittent attacks of pain which radiated towards the loins and thighs, and were accompanied by somewhat profuse uterine hæmorrhage.

The abdominal wall was retracted, and there was tenderness on the left side. The uterus was slightly enlarged and tender, but freely movable. In Douglas's pouch there was an elongated, elastic, indistinctly fluctuating swelling of the size of a hen's egg, which was prolonged in the direction of the left angle of the uterus and was bound down to the pelvic floor.

Laparotomy was performed in Trendelenburg's position. The tumour was due to the elongated left Fallopian tube, which had the characters of a hematosalpinx, and was loosely adherent to the peritoneum of Douglas's pouch. The sac was freed from adhesions and removed by ligature and division of its pedicle. The right Fallopian tube and ovary were normal. The portion of the appendages removed consisted of the dilated tube and the left ovary, which was inseparably connected with the fimbriated extremity by adhesions. The Fallopian tube presented two enlargements—an inner, tense, deep red, and of the size of a hen's egg, and an outer, more solid swelling, of a lighter colour and the size of a walnut. On the right side of the larger swelling was a short fragment of the uterine portion of the Fallopian tube, which was practically normal, and on the left side of the smaller sac there was the greatly convoluted abdominal end of the tube, which was adherent to the ovary. The two tumours were distinct but connected by a short normal portion of the Fallopian tube. Both sacs contained remnants of decidua, chorionic villi, and blood clots. The walls of the larger sac were extremely thin, but both sacs had essentially the same structure. Both contained ova, the development of which had become arrested. But the two ova had become impregnated at different dates, that in the sac nearer the uterus three or four weeks earlier than that in the smaller and outer sac. In the left ovary a single corpus luteum of recent date was present. Probably therefore, the ovum in the outer third of the left Fallopian tube had migrated from the right ovary. —(*The Medical Review*)

An easy way of administering Sulphate of Quinine to Children

Dr Borde, of Bordeaux, mixes in a mortar one gramme of quin sulph with eight grammes of olive oil. Twenty drops of this mixture (counted with an ordinary dropper) contain about five centigrammes of quinine. On pouring some of this mixture into a tablespoon half full of cold milk (sweetened preferably) the mixture floats in the shape of a disc in the centre of the milk. Every particle of quinine is covered by the oil, and passes readily down the throat without adhering to the palate, and the bitter taste of the quinine is effectively disguised. A mouthful of any drink taken directly afterwards helps to obviate any bitter after taste that sometimes occurs.

J W F R

Correspondence

A QUESTION OF MEDICAL ETHICS

To the Editor of "THE INDIAN MEDICAL GAZETTE."

DEAR SIR,—Why should we in India accept a lower ethical standard than that which influences the medical profession in England? No one I fancy would, after due consideration, deny that this is the case, to a measurable extent in the ranks of the service and to an infinite extent outside it. Without dwelling on the iniquities of Indian graduates and practitioners in general who aspire to no ideal, are bound by no laws except those of the land and are subject to no discipline, let me mention two paths of divergence from the ethical ideal which are at times traversed by officers of the service. One is the custom of sending books and pamphlets on purely medical topics for review by lay organs. If this is done by the publisher, it must be with the acquiescence of the author. No medical author in England would dream of allowing his book to be sent to the daily press for review, and, if such a notice were to appear, he would quickly have his attention called to the fact, and in an unpleasant way, by the General Medical Council. Let medical works be reviewed by medical and scientific journals, and by them only. In this connection I might remark that I, and others with whom I have discussed the subject, have noticed what appears to be a tendency to find nothing but praise for the product of an Indian pen. The destructive effect of mutual admiration on honest effort need be only mentioned to be realised.

By all means let unstinted praise be given where it is due, but to be of value criticism must not fail at the same time to throw light on faults and weaknesses. Nothing is more annoying than to buy a book on the strength of a review, and to find it worthless or perhaps one which will bear a single perusal only and will not pay for its freight when the next transfer comes.

The second point is the appearance of highly objectionable paragraphs of an appreciative nature from time to time in the columns of the daily press, such as would be the ruin of a practitioner in England. The subjects of these paras or articles are frequently in no way responsible for them, editors are alone to blame for inserting them. Still it sometimes happens that these paras emanate from or are inspired by subordinates, and a medical officer should therefore not omit to let it be known that he derives no gratification from them, but, on the contrary, feels highly incensed that anyone should have taken such liberties with his name.

Most of us, however, in India occupy somewhat different positions from those of practitioners in England, and, in so far as a man is a public official, the public press has a right presumably to criticise his actions as an official, but further than that they should not be allowed to go without remonstrance, which unfortunately is the only force we can bring to bear on editors.

Yours faithfully,
J W CORNWALL.

ANNUAL REPORTS

ANNUAL RETURNS OF THE CIVIL HOSPITALS AND DISPENSARIES IN THE MADRAS PRESIDENCY FOR 1902

THE statistics are drawn from 486 institutions, with accommodation for 4,644 patients (2,617 males and 2,027 females). The in patients numbered 61,592, and there were 4,929,053 out-patients. The surgical operations numbered 163,941, with a death rate of .22 per cent. As an index of improvements in asepsis and antisepsis it is of interest to note that special mention is made of mortality from septic infection contracted in hospital. From this cause there were only 8 deaths, of which 5 were in one hospital and in three other institutions there was death from the same cause. In 116 cases there was sepsis prior to admission. Operations on bones numerically head the list with 3,851, excision of tumours and obstetric operations come next with 2,141 and 2,117. There were 1,495 extractions of the lens. On the other hand, the paucity of certain other operations is remarkable, e.g., removal of vesical calculi 62, abscess of liver 60, and 55 abdominal sections. The cost per patient is given as follows—

	Rs	As	P
(1) Establishment	0	2	8
(2) Medicines	0	0	8
(3) Diet	2	13	8
(4) Miscellaneous	0	0	7 7
Total of (1), (2) and (4)	0	4	7

ANNUAL REPORT OF THE GOVERNMENT MATERNITY HOSPITAL, MADRAS, 1902

LIEUTENANT COLONEL A J STURMER's report bristles with figures, and is a model of conciseness. It shows that a large amount of useful work is steadily carried on. The cases treated in the hospital numbered 3,668, of which 2,101 were obstetric in character, and 1,567 were for diseases of pregnancy or gynaecological cases. Out of 2,029 deliveries 1,405, 69.25%, were cases of natural labour, 166, or 8.18%, were cases of difficult labour, 42, or 2.07%, were preterm, 331, or 16.31%, were complex, and 85, or 4.19%, were abortions. In order of frequency the patients were Hindus, Pariahs, Eurasians and Native Christians. Europeans, Mahomedans and Parsees seem to make comparatively little use of this hospital.

With regard to eclampsia Lt. Col Sturmer writes—"I am of opinion that no one line of treatment can be adopted, because the cases vary so much. A patient may have only one or two fits, yet the poison has had such an effect on the nervous centres that she never regains consciousness, and the coma deepens, in spite of treatment, until death ends the scene. In another case there may be found no albumen in the urine, yet the lungs are clogged with fluid, and in such a case the injection of normal saline solution with or without acetate of potash will tend to increase the oedema,—and in yet another variety the urine is very scanty but solid with albumen, and here the saline injection finds its most efficient use,—but unfortunately diuresis does not occur until some considerable time after the injection, and in the meantime the patient may die. The cases treated with thyroid extract have so far given excellent results, but many years ago Dr Harris treated 17 cases of eclampsia with tincture of Veratrum Viride and all recovered, so I think it is rather premature to be jubilant over the thyroid treatment." Dengue fever proved epidemic

during the later months of the year, without having any apparent ill effects on child birth. At the same time it very much retarded recovery in the puerperium, owing to the depression and loss of strength produced.

There were 53 deaths, including 5 deaths that occurred before delivery was effected, and 16 cases admitted in a moribund state. The cases of puerperal sepsis and septicæmia numbered 95, the greatest numbers occurred between August and November inclusive.

Service Notes.

MEMORANDUM REGARDING THE POSITION OF OFFICERS TO BE APPOINTED TO HIS MAJESTY'S INDIAN MEDICAL SERVICE.

India Office, October, 1903

1 This memorandum is based on the regulations in force at the present time. They are subject to any alterations that may be determined on.

PASSAGE TO INDIA

2 Officers on appointment are, when possible, provided with passage to India by troop transport, when such accommodation is not available passage at the public expense is provided by steamer, or a passage allowance granted if preferred. A charge for messing during the voyage is made at the rate of 2s a day. This payment does not include the cost of liquors, which are charged for as extras.

3 Any officer who may neglect or refuse to proceed to India if ordered to do so within two months from the date of leaving Netley, or within 14 days of the termination of his hospital appointment if the Secretary of State for India has permitted him to hold one, will be considered as having forfeited his commission, unless special circumstances shall, in the opinion of the Secretary of State in Council, justify a departure from this regulation.

PAY PREVIOUS TO ARRIVAL IN INDIA

4 The rate of pay drawn by lieutenants of the Indian Medical Service previous to arrival in India is 14s. a day, but a Lieutenant (1) who has been permitted by the Secretary of State to hold a hospital appointment will receive no pay while holding it, (2) who is detained by illness in this country will be paid at the rate of £200 a year from the date on which he would otherwise have embarked until the date of embarkation and at the rate of 14s a day during the voyage to India. (For rates subsequent to their landing in India, see paras 16, 17 and 18).

Pay at the above rate is issued in this country up to the date of embarkation, and an advance of two months' pay at the same rate is also made prior to embarkation, which is adjusted in India in accordance with the rate laid down in para 16.

GRADES AND PRECEDENCE

5 The grades of officers in the Indian Medical Service are six in number, viz (1) Surgeon general (2) Colonel (3) Lieutenant-colonel (4) Major (5) Captain (6) Lieutenant.

PROMOTION

6 A lieutenant's commission dates from the day on which his course of instruction commences.

7 A lieutenant may be promoted to captain on completion of three years' full pay* service from date of first commission but after completing 18 months' service and before promotion to the rank of captain he will be required to pass an examination in military law and military medical organisation, the result of which may affect his promotion.

8 A captain is promoted to major on completion of 12 years' full pay* service.

9 A major is promoted to lieutenant-colonel on completion of 20 years' full pay* service.

10 All promotions from the rank of lieutenant-colonel to that of colonel, and from the rank of colonel to that of surgeon general, are given by selection for ability and merit.

11 On appointment as honorary physician or honorary surgeon to His Majesty an officer below the rank of colonel is promoted to that rank, remaining supernumerary until absorbed.

12 For distinguished service in the field an officer of the Indian Medical Service may receive substantive or brevet promotion.

TENURE OF OFFICE IN ADMINISTRATIVE GRADES

13 The tenure of office of surgeon generals and colonels is limited to five years.

* See, however, para. 42.

16 The following are the monthly rates of Indian pay drawn by officers of the Indian Medical Service from the date of their arrival in India —

NOTES—*a.* Unemployed pay is drawn by officers of less than seven years' service who are not holding officiating or substantive charge of native regiments. Officers of more than seven years' service draw grade pay alone when unemployed. Staff pay is the pay of a command and is drawn in addition to grade pay.

b Horse allowance is granted to officers in substantive charge of cavalry regiments at the rate of Rs 90 a month to lieutenant-colonels and majors and Rs 60 a month to captains and lieutenants.

Colonel from Rs 1,800 to Rs. 2 250	per mensem
Surgeon General, two at Rs 2,200	" "
" " " Rs 2,500	" "
" " one at Rs 3,000	" "

24 Surgeon generals and colonels, on vacating office at the expiration of the five years' tour of duty, are permitted to draw in India an unemployed salary of Rs. 1,200 per mensem in the

28 No extension of leave involving absence from duty for more than two years, whether taken in or out of India, can be granted except on specially urgent grounds and without pay

37 In each of the above cases stated in paras 35 and 36 eight months absence on leave is allowed to count towards actual service in those grades. (See para 30)

38 A surgeon general or colonel who has completed his term of service and has reverted to British pay may reside in Europe, at the same time qualifying for higher pension.

† Note to paras 18 to 20.—Under present arrangements officers of the Indian Medical Service who are not statutory natives of India receive exchange compensation Allowance to compensate them for the fall of the value of the rupee. The allowance consists of an addition to their salaries (subject to certain limitations) equal to half the difference between their salaries converted at (1) 1s 6d the rupee, and (2) the average market rate for each quarter.

39 With a view to maintain the efficiency of the service all officers of the rank of lieutenant colonel and major are placed on the retired list when they have attained the age of 55 years, and all surgeon generals and colonels when they have attained the age of 60 years. But a lieutenant-colonel who has been specially selected for increased pay if he attains the age of 55 years before he becomes entitled to the pension for 30 years' service may be retained until completion of such service, and in any special case where it would appear to be for the good of the service that an officer should continue in employment he may be so continued, subject in each case to the sanction of the Secretary of State for India in Council.

40 Officers placed on temporary or permanent half pay under para 27 are granted the British rate of half pay of their military rank as under

Rank	RATES OF HALF PAY				
	Per diem		Per annum		
	s	d	£	s	d
Lieutenant-Colonel	11	0	200	15	0
Major	9	0	178	7	8
Captain	7	0	127	15	0
Lieutenant	3	0	54	15	0

Officers cannot retire in India on half pay (No 45, 28th February, 1865)

INVALID PENSIONS

41 An officer who has become incapacitated for further service in India on account of unfitness caused by duty may, after he has been two years on temporary half pay, be granted an invalid pension on the following scale —

	Per annum
After 16 years' pension service	£272
" 15 " " "	252
" 14 " " "	232
" 13 " " "	212
" 12 " " "	192

42 Time (not exceeding one year) passed on temporary half pay reckons as service for promotion and pension in the case of an officer placed on half pay on account of ill health contracted in the performance of military duty

43 Officers of the Indian Medical Service are liable, after retirement on pension before completing 30 years' service, to recall to military duty in case of any great emergency arising up to 55 years of age

WOUND PENSIONS

44 Officers are entitled to the same allowances on account of wounds received in action and injuries sustained through the performance of military duty otherwise than in action as are granted to combatant officers of His Majesty's Indian Military Forces holding the corresponding military rank

FAMILY PENSIONS

45 The claims to pension of widows and families of officers are treated under the provisions of such Royal Warrant regulating the grant of pensions to the widows and families of British officers as may be in force at the time being

46 The widows and families of officers are also entitled to pensions under the Indian Service Family Pension Regulations, for the benefits of which all officers must, as a condition of their appointment, subscribe from the date of their arrival in India

THE services of Captain J. C. S. Oxley are placed at the disposal of the Chief Commissioner of the Central Provinces, and a similar notification concerning Captain G. King, M.B., I.M.S., is cancelled

CAPTAIN J. A. BLACK, I.M.S., is attached to the Calcutta Laboratory as probationer in the Chemical Examiner's Department.

RETIREMENTS.—Lieutenant Colonel Sorabshaw Hormasji Dantra and Lieutenant-Colonel Zalmoor Allee Ahmed, M.D., both I.M.S., from 10th and 19th July 1903, respectively

LIEUTENANT COLONEL E. F. H. DOBSON, I.M.S., is confirmed in the appointment of Medical Store-keeper, Bengal Command, and is granted privilege leave for two months

LIEUTENANT S. B. CHRISTOPHERS, I.M.S., is placed on special duty under the orders of the Director General, I.M.S.

THE services of Captain D. R. Green, M.D., I.M.S., and Captain C. A. Lane, M.D., I.M.S., are placed permanently at the disposal of the Government of Bengal

LIEUTENANT COLONEL L. A. WADDELL, I.M.S., is to hold civil medical charge of the Almora District in addition to his military duties, vice Lieutenant W. O. Ross, I.M.S.

MAJOR S. E. PRALL, M.B., I.M.S., acts as Port Surgeon, Aden, vice Lieutenant-Colonel C. Monks, I.M.S., on leave

CAPTAIN V. B. BENNETT, M.B., I.M.S., on relief by Major J. B. Jameson, M.B., I.M.S., acts as Civil Surgeon of Broach

CAPTAIN S. G. BUTLER, R.A.M.C., officiates as Personal Assistant to the P.M.O., Madras Command, vice Captain A. E. Milner, R.A.M.C., granted leave out of India

EXCHANGES.—Between Captain T. J. Linchan, R.A.M.C., of the Indian Establishment and Major J. R. Forrest, R.A.M.C., of the Home Establishment

THE services of Captain R. Bryson, I.M.S., are placed permanently at the disposal of the Government of Madras

CAPTAIN S. ANDERSON, I.M.S., officiates as Civil Surgeon of Goalpara

PROMOTIONS.—Dated 28th July 1903 —

Captains to be Majors, Bengal Establishment

B. H. Deare, B. C. Oldham, R. Bird, M.D., S. B. SMITH, J. S. S. Lumsden, M.B., G. H. Frost, M.B., E. WILKINSON, G. F. W. Ewens M.D., C. Duer, M.B., H. S. Wood, M.B.

Madras Establishment

J. Entrican, M.B., W. G. Pridmore, M.B., C. Donovan, M.D., J. Penny, D. H. McDonnell Graves, M.B., C. H. L. Falk, M.D.

Bombay Establishment

T. W. Irvine, M.B.

CAPTAIN R. H. MADDON, I.M.S., Officiating Civil Surgeon of Darjeeling, is appointed to be Civil Surgeon of Nadia, and is allowed leave for ninety days

CAPTAIN M. H. THORNLEY, I.M.S., acts as Civil Surgeon of Jalpaiguri, vice Captain W. D. Hayward, I.M.S., on deputation

CAPTAIN T. A. GRANGER, I.M.S., assumed charge of the civil medical duties of the Hazara District, relieving Captain J. L. MacInnes, I.M.S.

LIEUTENANT W. D. RITCHIE, I.M.S., has officiating medical charge of the 13th Rajputs

CAPTAIN I. C. ROBERTSON, I.M.S., Deputy Sanitary Commissioner, 2nd Circle, is granted privilege leave for three months. Major J. Chaytor White, I.M.S., acts for him in addition to his own duties until relieved by Captain G. Hutcheson, I.M.S., on return from leave

THE services of Major C. A. Johnston, M.B., I.M.S. (Madras), are placed temporarily at the disposal of the Government of Madras

PROMOTIONS.—Dated 10th April 1903 —

Lieutenant-Colonel, S. Haslett Browne, O.I.E., M.D., I.M.S., to be Colonel

Dated 30th June 1903 —

Lieutenant-Colonel Thomas James Hackett Williams, I.M.S., vice Colonel W. G. Johnson, M.D., I.M.S., retired

LIEUTENANT J. B. CAUTLEY, R.A.M.C., to have civil medical charge of Dinapore, in addition to being Regimental Medical Officer, vice Captain W. Lapsley, I.M.S.

CAPTAIN J. W. D. MEGAW, I.M.S., to act as Civil Surgeon of Puri during the absence on leave of Dr J. L. Hendley

PROMOTIONS.—Major to be Lieutenant Colonels —

R. R. H. Moore, M.D., A. E. Tate G. F. Gubbin, J. Maher, C. W. Johnson, M.B., W. Turner, all R.A.M.C.

THE services of Captain D. C. Kemp, I.M.S., are placed temporarily at the disposal of the Government of Madras, while the notification placing the services of Captain W. G. Richards, I.M.S., at the disposal of the same Government is cancelled

MAJOR W. H. W. ELLIOTT, M.B., D.S.O., I.M.S., is to be Secretary to the Principal Medical Officer, His Majesty's Forces in India, vice Lieutenant-Colonel J. Shearer, M.B., D.S.O., I.M.S., whose tenure of the appointment has expired

THE undermentioned officers have been admitted into the Indian Medical Service, their commissions being dated 31st January 1903 —

William Samuel Jagoe Shaw (Bombay)
Charles Seymour Parker
Harold Holkar Broome (Punjab)
Frederick Norman White (Bengal)
Charles Gibbons Seymour (Punjab)
Davis Heron (Punjab)
Thomas Corrie Rutherford (Punjab)
Henry Crewe Keates (Punjab)
Leatham Reynolds (Punjab)
Ernest Charles Taylor (Punjab)
Richard Arthur Nedham (Madras)
Dwarkan Prasad Goll (Bombay)
James Kirkwood (Madras)
Alfred Whitmore (Madras)

CAPTAIN W S WILLMORE, I M S, Officiating Superintendent, Central Prison, Benares, on being relieved, is to officiate as Civil Surgeon of Bulandshahr

MAJOR F A. ROGERS, I M S, Civil Surgeon, Monghyr, is allowed privilege leave combined with furlough for one year and 10 months

MAJOR W H G WOODWRIGHT, I M S, Civil Surgeon, Aligarh, to hold visiting medical charge of the Bulandshahr District in addition to his own duties

MAJOR D W SCOTLAND, I M S, Civil Surgeon of Saharanpur, to be in visiting medical charge of the Muzaffarnagar District in addition to his own duties, *vice* Dr H A. MacLeod granted leave

CAPTAIN A GWYTHYR, I M S, Officiating Civil Surgeon of Darbhanga, is allowed privilege leave combined with furlough for one year

LIEUTENANT COLONEL H J BARRATT, R A M C, in charge Station Hospital, Barrackpore, has civil medical charge of that station.

THE services of Captain G Brouse, I M S, are placed at the disposal of His Excellency the Commander in Chief in India

THE services of Captain H J Walton, M B, F R C S, I M S, are placed temporarily at the disposal of the Foreign Department.

THE services of Captain P Deo, M B, I M S (Madras), and Captain A. Fenton, M B, I M S, are placed permanently at the disposal of the Government of Burma

LIEUTENANT COLONEL SAMUEL FERGUSON BIGGER, M B, I M S (Bengal), 3rd Punjab Cavalry, is permitted to retire from the service

CAPTAIN J W MACLEOD, I M S, an Agency Surgeon on the second class, and Civil Surgeon of Quetta, is granted privilege leave for three months and furlough for nine months in continuation. Captain C H Bowle Evans, I M S is appointed to act for him as Agency Surgeon and is posted as Civil Surgeon of Quetta

MAJOR O H L. MEYER, M D, B S, I M S, and Captain S H Burnett, M B, C M, I M S, have been allowed to return to duty within the period of their leave

CAPTAIN W V COPPINGER, M D, I M S, Officiating Civil Surgeon of Sarun, acts temporarily as Deputy Sanitary Commissioner, Metropolitan and Eastern Bengal Circle, *vice* Captain A. F. Stevens, I M S

LIEUTENANT COLONEL A SILCOCK, I M S, Civil Surgeon, is posted to the Raipur District on return from leave

PROMOTIONS.—LIEUTENANT COLONEL WILLIAM RICHARD BROWN, M D, Madras Establishment, to be Colonel, dated 19th May 1903

CONSEQUENT on the deputation of Lieutenant-Colonel C C Manifold, I M S, under the Government of India, Major J GARVIE, Captain J S S Lumsden, Captain C Milne, Captain G T Birdwood, Captain E. J. Morgan, Major R J Marks, Major G B French and Captain H. Auston Smith, all officiating Civil Surgeons to be Civil Surgeons, 2nd class, sub *pro tem*

CAPTAIN C A LANE, M D, I M S, Officiating Civil Surgeon, Puri, acts as Professor of Pathology, Medical College, Calcutta, during the deputation of Major F J Drury, M B, I M S, as Principal and Professor of Medicine of that College

MAJOR P W O'GORMAN, I M S, is confirmed in the appointment of Medical Storekeeper, Punjab Command

CAPTAIN W SELBY, I M S, Officiating Civil Surgeon, Azamgarh, to be in visiting medical charge of the Jaunpur District in addition to his own duties

CAPTAIN J N WALKER, I M S, Officiating Civil Surgeon, is transferred from Jaunpur to Gonda.

MAJOR J L T JONES, I M S, Officiating Assay Master, Calcutta, is appointed to act as Mint Master, Calcutta, in addition to his own duties, during the absence of Colonel B Scott, C I E, R E.

PROMOTIONS.—Lieutenants to be Captains, dated 28th June 1903 —

James Drummond Graham, M D
Cuthbert Allan Sprawson, M D
Maxwell MacKelvie, M B
William Lapsley, M B
William Henry Cazeley
Percy Alfred Browne, M D
Walter Valentine Coppinger, M D
Alfred Spitteler, M B
James Charles Stewart Oxley
Henry Richard Macnee
Leonard Joseph Montague Deas, M B
William Mitchell Houston, M B
William David Acheson Keys, M D
George Joseph Grafton Young, M B
James Good, M B
Alexander Chalmers, M B.
William Gavin Hamilton
Samuel Robert Godkin

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BOOKS, REPORTS, &c, RECEIVED

Diseases of Women By A H N Lowers M D F R C P Sixth Edition H K Lewis London 1903 Practical Series.
The Practical Details of Cataract Extraction. By Major H Herbert F R C S, I M S Baillière Tindall and Cox, 1903
Aids to Physiology By P T B Beale, F R C S. Baillière, Tindall and Cox London 1903
Modern Methods in the Surgery of Paralysis. By A. H. Tubby, F R C S and R Jones F R C S Macmillan & Co, London, 1903
The Bacteriological Impurities of Vaccine Virus By M J Rosenau Hygienic Laboratory Washington
Quarantine Laws and Regulations of the United States.
Report upon the Prevalence and Geographic Distribution of Hook worm Disease (Ankylostomiasis) in the United States. By C W Stiles, Ph D
Cancer and Precancerous Changes their Origin and Treatment. By Major G H Fink, M R C S, I M S (retired).
Notes and Statistics on Hospitals and Dispensaries in Burma, 1902.
Report on the Administration of the Salt Department, 1902 1903
Notes on the Annual Statements of the Dispensaries and Charitable Institutions of the Punjab, 1902
Annual Report on the Reformatory Schools at Allipore and Hazari bagh 1902.
Travelling Allowance Chart. By E O Dozey
Annual Returns of the Civil Hospitals and Dispensaries in the Madras Presidency for 1902
Annual Report of the Government General Hospital, Madras, 1902
Report on vaccination in the Madras Presidency for 1902 1903
Triennial Report on the Lunatic Asylums in the Madras Presidency for 1902
Notes on Vaccination in the Punjab for 1902 1903
Medical Missions in India, October, 1903

LETTERS, COMMUNICATIONS, RECEIVED, FROM —

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Original Articles.

THE BIOLOGICAL DISPOSAL OF SEWAGE

By E. C. MACLEOD,

CAPT., I.M.S.

In the following paper it has been the aim of the writer to present a sketch of the subject at the same time comprehensive and concise. With this view he has been constrained to lay down somewhat dogmatically perhaps the principles which he himself is most in favour of.

To have given more than a brief description even of these would have swelled the text to twice its present bulk and have rendered it less acceptable to the reader. It is possible also that greater diffuseness might have weakened the impressions it has been desired to convey.

The author must plead excuse for occasional repetition of the same words and expressions, a tautological blemish, which, in the process of an exact description, is both necessary and unavoidable.

Should the publication of this sketch be the means of giving the subject of Biological Disposal of Sewage more publicity and at the same time prove suggestive, the writer's object will have been attained.

It is proposed to deal with the subject under two headings,

- 1 Under this heading a description of the principle of the biological disposal of sewage will be given, together with a general outline of its applicability.
- 2 Attention will be drawn to both the desirability and practicability of its introduction, under certain conditions, into India.

The difficulty of an universal application of this system on a large scale being recognised, especially in places where the water-supply is from wells, the practicability of introducing separate small installations suitable for the use of municipal, cantonment, regimental, hospital and jail latrines is suggested.

It should be borne in mind that in the biological disposal of sewage the process is effected naturally by the alternate and combined action of chiefly anaerobic and aerobic organisms, whose normal element is sewage, and whose function in economics is sewage disposal.

Then numbers may be said to vary from 1,000,000 to 12,000,000 per c c of crude sewage.

The process will be described in three stages, viz—

A—Liquefaction—In a septic tank, open or closed.

B—Liquefaction and Nitrification—By upward or downward passage of the

liquefied sewage, through contact beds, followed by a period of rest therein.

C—Nitrification and Oxidation—By continuous downward filtration through open filter beds.

A Liquefaction is effected chiefly through the agency of anaerobic organisms, as an example of which, may be mentioned the various forms of "Clostridium" and the "Bacillus Amylobacter." Liquefaction appears to be directly accomplished by the products of these organisms, by the action of a class of soluble nitrogenous compounds known as "Enzymes." The hydrolytic action of these bodies may be compared to that effected by diastase, pepsin and trypsin, during the process of digestion.

Scott-Moncrieff's experiment (1891), whereby the purification of sewage was aimed at by upward filtration, through contact beds of stone, appears to have been the first step towards the solution of this problem of disposal of sewage by natural means.

The liquefaction effected was chiefly through the agency of anaerobic organisms with the production probably of some ammoniacal compounds.

The necessity of liquefaction as an initial step in the natural disposal of sewage will be better understood by a reference to the three stages tabulated above, and if it be pointed out that the life of contact beds and filters would be considerably shortened and then area of action diminished by the passage of crude sewage into them, it will be obvious that liquefaction, as an initial step in the biological disposal of sewage, is necessitated by the fact that the contact beds are found to become sooner or later clogged by solid organic matter which they are unable to dispose of.

It may be mentioned here that precipitation by chemicals, as by the aluminous sulphate of iron or by lime, is still practised as an initial step in the disposal of sewage in some places, apart from the expense entailed, it is a retrograde step, inhibiting as it does, the natural action of the organisms which it should be our chief aim to cultivate under conditions most favourable to them, and this object can scarcely be attained by subjecting them to a preliminary, to say the least, nauseating dose.

How then is this initial step of liquefaction to be most satisfactorily obtained?

The answer is by allowing the sewage to rest for a period and in a tank where anaerobic conditions are favourable and where the requisite degree of liquefaction can take place. For efficient working, the tank should be capable of containing 1 to 1½ days' flow. The size, however, may vary, within limits, inversely with the size of the contact beds.

The question as to whether a septic tank should be open, or hermetically closed in, has been the subject of much discussion. It may

be said in favour of the former that it is less expensive, and in some respects more under control, and has been found to give results as good as the closed

It seems to me, however, that in India it would be better, in order to maintain as uniform a temperature as possible, as well as to protect the scum which forms on the surface from heavy rainfall, to have a roof over the tanks or to close them. Against the open tank is the fact that the gases generated are not under control, as in the closed tanks where they can be carried off by pipes and burnt. I have been in the vicinity of open tanks for hours, and though somewhat unpleasant at times, the term "nuisance" could scarcely be applied to them.

B After the initial stage of liquefaction the process should be continued by the passage of the sewage through contact beds.

Authorities differ somewhat as to whether upward, lateral or downward passage should be adopted. The essential feature, however, is to have a good medium of clinkers, or coke, and clinkers (gravel, coal, may be substituted in cases where the former are not obtainable). The harder the substance the less debris will there be, and it is always advisable to wash the medium well, if possible, both before and after placing it in the bed.

It should be noted that though it is a *sine qua non* that the septic tank should be thoroughly well cemented, say with cement from $\frac{1}{2}$ inch to 1 inch in thickness, whereas the contact beds may, if the soil is of clay or very stiff, be merely dug out to the requisite depth, if, however, the soil is loose or loamy the bottom and sides of the bed should be built up with 6 inches—1 ft of clay and well battered down.

Clinkers, coke, or clinkers and coke, or hard material discarded from rail and steamer engines, &c, should be screened, and in cases in which a downward passage of the sewage is adopted, made to form the medium as follows—

Top for 1 ft, material which has passed $\frac{1}{2}$ inch mesh, rejected by $\frac{1}{8}$ " Middle for 2 ft, material which has passed 1-inch mesh, rejected by $\frac{1}{2}$ inch Bottom for 1 ft material which has passed 3 inches mesh, rejected by 1 inch

Theoretically, the passage through a contact bed between the septic tank and continuous filters should be attended with good results, as offering the best means of complete liquefaction and of commencing nitrification by aerobic organisms.

It is known that antagonistic organisms do not work well together, one variety overgrowing the other, and it is only fair to suppose that organisms so opposed to each other, as anaerobic and aerobic, would each do their work best where the conditions are favourable, resting or ceasing work when these again became adverse.

It should be here explained that it is usual to fill the contact beds three times daily

Filling	1 to 2 hours	} 8 hours
Remaining full	2 to 3 "	
Emptying	2 "	
Resting empty	2 "	

More frequent or longer periods of rest may sometimes be beneficial.

Theoretically by this intermediate treatment in contact beds anaerobic conditions are to some extent maintained, oxidation and partial nitrification being effected during the filling, emptying, and especially the resting periods allowed to the bed.

Many of the systems in vogue in England stop short at this stage, and consequently unless further purification is effected by a second contact bed, or by land treatment, the effluent produced is not all it might be.

Though the passage through a second contact bed or on to land, owing to further nitrification and oxidation, may be said to be a fairly satisfactory ending, the third stage of purification, whereby the effluent is passed through open filter beds in the manner to be now described, is likely to be attended with the best results.

C Filtration—It should be clearly understood that these filters should have no retaining walls, but should be open on all sides. Clinkers or other hard material rejected by a 2-inch mesh may be used and built up as shown in the accompanying diagram. The depth of the filter may be 4 ft to 6 ft, and the size of the particles used may range from 2 inches to 6 inches, the smaller ones being reserved for the upper layers of the filter.

Great care is necessary to ensure an uniform working of all parts of the filter, and it is obvious that any method, whereby the effluent can be distributed so as to accomplish this, should be, if possible, adopted. Several forms of distributors and sprinklers have been advocated, perhaps the simplest of all, where a fall of 3 ft or more is available, is by 2-inch iron pipes perforated at intervals of 4 inches with holes $\frac{1}{16}$ inch to $\frac{1}{8}$ inch in diameter. The pipes should be parallel to each other and 4 feet apart. The working, however, is not altogether satisfactory as the holes become clogged, and the streams, unless there is wind, fall constantly in one place. Where money is no object a Stone's Distributor, such as used at Chesterfield, may be adopted and is said to work very satisfactorily.

Among other forms of distributors may be mentioned Stoddart's and Watson's.

The object aimed at and the end obtained by this process of filtration is complete nitrification and oxidation of the remaining organic matter in the contact beds' effluent.

As the filter is only at work during the period the contact beds are discharging their contents, it is advisable to have two or three

contact beds working alternately, which, if filled and emptied thrice daily, would necessitate the filter being used for from 12 to 18 hours out of the 24. Continuous working for months on end does not appear to injuriously affect the filter, nor do short periods of rest appear to be harmful. By an automatic gear the alternate discharge of the effluent from the contact beds into the filter could be easily arranged.

In the above description it will be seen that in the process of purification the three stages described merge into one another to a variable extent.

A reference to the accompanying diagram should furnish some idea of the plant required.

It is not within the scope of this article to state what a satisfactory effluent is. The question is an extremely difficult one, and depends rather on the variety of organisms in it than on the numbers, *eg*, the presence of very few typhoid or cholera organisms per cc in an effluent would be a very undesirable state of affairs, whereas the presence of 100,000 comparative harmless organisms, whether liquefiers or not, would not necessarily condemn an effluent. It is satisfactory, and indeed almost imperative, to have periodically the opinion of a bacteriologist on the character of the effluent, especially where this flows into a stream which may be used for *drinking* purposes.

Where the effluent flows into water which is not used for drinking purposes, the usual chemical tests for organic matter and nitrites might in some cases be allowed to suffice. In no instance should the fact that a clean, bright effluent, which does not putrify, is produced, delude one into supposing that it can be carelessly dealt with. It must, however, be borne in mind that the character of an effluent often improves, and a sample from a ripe filter, say one which had been working six months, might give better results than if a sample be taken before the expiration of this period.

I have recently had an opportunity, through the kindness of Mr Henry Crookes in allowing me to use his laboratory, of making a bacteriological examination of an effluent. The sewage had been passed through a closed septic tank and contact beds only, with what result the following examination, though imperfect, will give some idea,—3 gelatine plates at 20°C, dilutions 10, 100 and 1,000, showed an average of 59,700 organisms to the cc with a very large proportion of liquefiers, 2 agar plates, dilutions 100 and 1,000 incubated for six days at 20°C gave an average of 112,500 organisms per cc.

The organisms on two agar plates, dilutions 100 and 1,000, were, after 24 hours' incubation at 37°C uncountable, owing to the surface being overgrown.

A large amount of gas was generated. The following bacteria were demonstrated.

B. Coli, *Proteus vulgaris*, *B. Enteritidis*, the latter by the anaerobic milk test.

B. Fluorescens Liq., *Prodigeosus*, Pink Yeast, and a few moulds were also present.

The effluent was very fairly clean, "pearl type" being read through it at a depth of 6 inches.

No putrefactive changes had occurred at the end of a week and no bubbles remained 3—4 seconds after shaking.

II It must be pointed out that only the broad outlines of sewage disposal are being treated on in this article, the subject is full of detail, and it cannot be too strongly urged that all points connected with both the sanitary and engineering sides of the question should receive the careful attention of those into whose hands the responsibility for erecting an installation is placed.

It should be mentioned that no patent rights are attached to the system described. In some cases, particularly where the fall obtainable does not allow of the working by gravitation, it would be necessary to introduce some artificial means of obtaining this, no insuperable difficulty is likely to arise which the ingenuity of our engineers could not overcome. Small separate chambers, interposed between the septic tank and contact beds and contact beds and filters, will allow of these being emptied by syphons, and the emptying and filling might be automatically arranged.

When a constant daily supply of water from 3 to 20 gallons or more per head and a good fall, say 10 ft, 12 ft, is obtainable, the bacteriological disposal of sewage, in many of our large cantonments and Indian cities, and especially in our hill stations, should be quite feasible.

When the water is distributed by pipes, or even open channels, sufficient of this might be diverted to allow of a water carriage system of sewage being adopted, and of its being disposed of by tank, contact beds, and subsequent treatment by filters or land.

Again, wherever irrigation is practised, there should be little difficulty in diverting and utilising some of this water, sufficient for flushing purposes, and for diluting and carrying the sewage to its destination.

In places where the supply is not capable of general distribution—and we are confronted by a difficulty, the converse of that often met with in England, *ie*, the want of a constant and sufficient water-supply, it is still desirable that some such system as the one described for the natural purification of sewage should be carried out as far as possible.

In such cases installations might be made to form part and parcel of latrines, and could be erected at a comparatively small cost to meet the necessary requirements of hospital, jail, cantonments and other latrines used by communities.

The desirability of excluding all forms of antiseptics and deodorants cannot be too

strongly urged. Their utility at any time, except in skilled hands, is more than doubtful.

To overcome any unpleasant odour the extra flushing necessitated should be a great advantage, ensuing as it would a certain dilution.

I read that in experiments carried on in an installation in Calcutta erected on the Exeter Septic Tank system, as little as half gallon per head was found to suffice for its satisfactory working. Conditions are in a warm climate undoubtedly favourable for rapid liquetaction and subsequent nitrification, especially where an uniform and favourable degree of temperature can be maintained. A greater degree of dilution, I think, would be attended with better results, and if two to three gallons of fluid per head were obtainable, the daily output from the tank might be passed into the contact beds without diminishing their capacity to any appreciable extent.

In the present state of our knowledge, are we justified in continuing the system of trenching now so much in vogue in India, where another and one vastly more satisfactory, from a sanitary point of view, can be successfully introduced?

Every installation, no matter how small, would be a step towards improved sanitation. It is only necessary here to mention two of the many dangers and disadvantages attending the use of trenching grounds, *viz*, the probability of contamination of water-supplies from trenching grounds, during the rains, particularly a heavy shower of rain, either by surface drainage, or by leakage through cracks in the soil, rat and worm holes, &c. And (2) to the fact, that it can *scarcely be desirable, as is sometimes done, to build on these old trenching grounds*, even after a considerable lapse of time. Dr Houston has found that garden soil treated with feces, even after a lapse of six months may contain 26,780,000 micro-organisms per gramme of soil. Practically all the installations on a large scale now in England deal with, in addition to faecal matter, refuse from breweries, soap works, and the residue from factories, &c, and in some cases, the drainage from roads the dilutions varying from 10 to 100, or, even more in rainy weather. As a result, one of the chief difficulties in disposal of sewage in England is to deal with the excess of fluid, more especially during rainy weather. Of the solids, other than the dejecta, which have to be got rid of, such articles as corks, fats, and *débris* of various kinds, offer the chief difficulty.

Now in most Indian towns and cantonments our sanitary system deals separately—

- (1) With faecal accumulation and urine
- (2) The refuse from cook-sheds, compounds and road sweepings

Even incinerators which satisfactorily consume both the above are not all they might be, owing to the draining away of urine with some

proportion of feces, and the consequent contamination of the drainage areas in the vicinity of the latrines.

Of the other forms of sewage disposal, few, I think, can be said to be entirely satisfactory, when this is effected by the application of crude faecal matter to the soil. In places where a constant and uniform water-supply by pipes or irrigation is *not* possible, the desirability of introducing some ready means of sewage disposal to meet various requirements should at least receive the attention of those responsible for the sanitation.

In conclusion, it may be observed that sewage effluents are exceedingly rich in nitrogenous bodies held in solution, and that the value of these as manure is very high.

In many instances an installation might be arranged so as to allow of land irrigation, and the application of a well purified effluent to the soil might safely be permitted.

The almost universal prejudice against cultivation of areas treated with raw sewage would not be so prevalent, if, as in these cases, a clear fluid possessing high manurial qualities could be offered.

MALARIA AS SEEN IN THE ANDAMANS PENAL SETTLEMENT

by ERNEST I. WATKINS, M.P. (P.O.S.)

Captain, I.M.S.,

Officiating S.M.O., Port Blair

(Continued from page 420)

Our hospital figures substantiate this theory. Well-cleaned established stations like Aberdeen, Haddo and Phoenix Bay are less malarial than out-stations like Goplakabang, but even in the healthy stations it is the men doing hard out-door work that furnish the bulk of the malarial cases. True, it is these men that have the most inducement to come to hospital, but latterly all our malaria cases have been examined microscopically and I have yet to find a malingerer who is competent to produce pigmented crescents at will, or to arrange for a suitable increase in his large mononuclear leucocytes. It appears to me that the convict may at times derive his fever from the bite of an infected mosquito, but that he may also have a relapse from a previous attack through exposure, overwork or some cause lowering his vitality. Again, while a healthy well-nourished man may only suffer slightly from fever after an infected bite, it is obvious that a weakly, chilled, tired man whose powers of resistance are much lowered would, in all probability, suffer to a much greater or more serious extent.

This question is admirably worked out by Attilio Caccini of Rome, in a series of articles published in the *Journal of Tropical Medicine* for May and June 1902.

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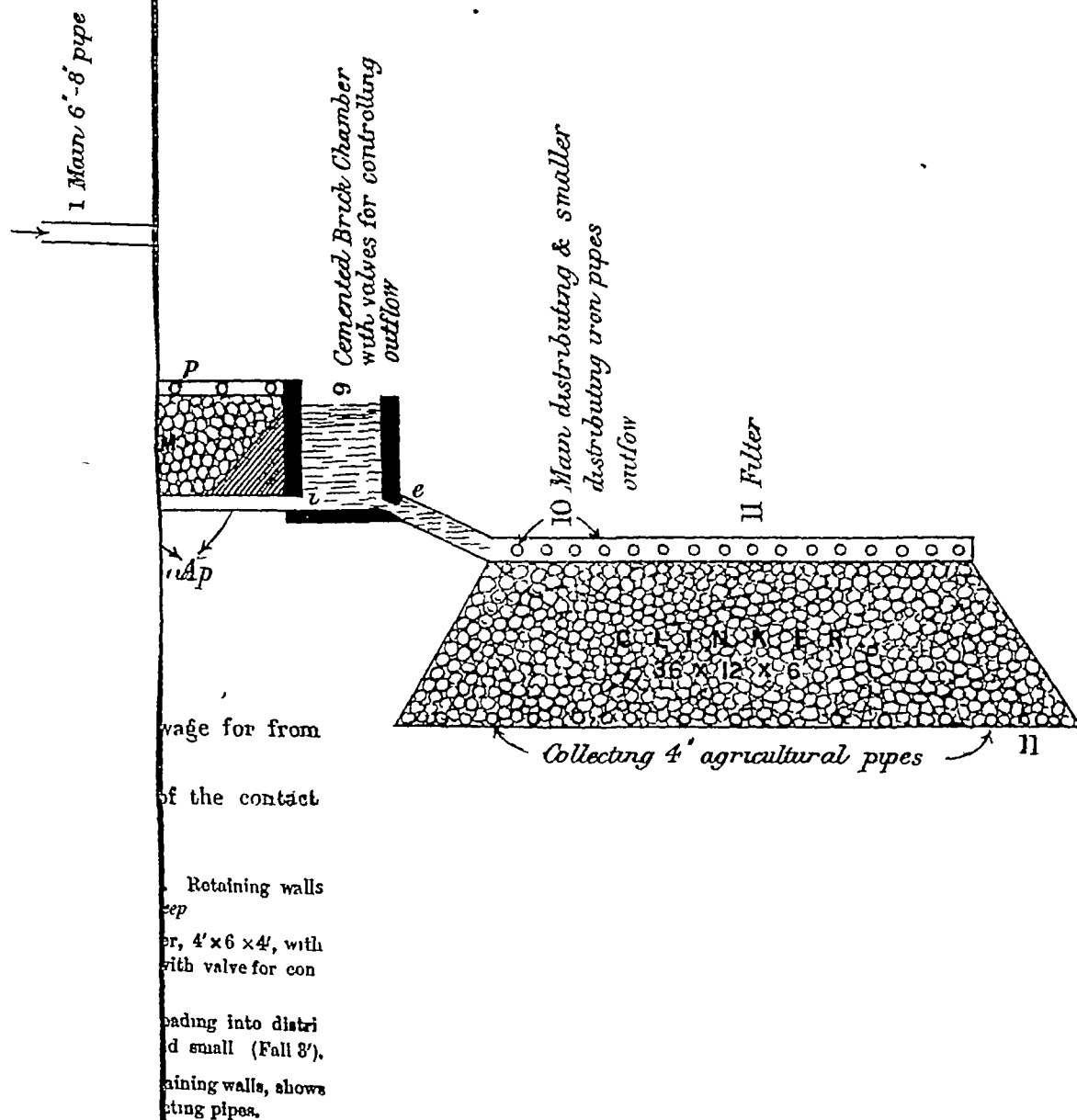
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He gives specific instances (with detailed examinations of cases) where fever has re-appeared within 48 hours of exposure to damp and cold, even in patients who were taking quinine regularly at the time of exposure.

He further proves "that in patients not treated with quinine, in whom the primary malarial infection has exhausted itself, the attack recurring after a long period always comes on after the intervention of one of these recognized determining causes." In these cases, parasites rapidly re-appear in the blood.

Further "The attack recurring after a long interval exactly resembles the first infection, that is, the paroxysms of fever may be more or less regular, attacks may or may not occur at long or short intervals and they react equally against the quinine treatment. But whereas regular systematic treatment prevents attacks recurring at short intervals, it does not prevent those recurring at long intervals, which come on after a space of time which may reach twelve months of apyrexia.

The attack always occurs upon the intervention of any of the organically debilitating causes mentioned. Thus with patients treated with quinine and divided into categories according to the method of treatment, every category shows the same percentage of attacks occurring at long intervals. In every case the attack followed upon the intervention of one of the debilitating causes above noted. Any patient guarding against debilitating accidents and observing a regular diet may remain free from attacks of fever for a long while (six to seven months), but suffers a relapse after that time upon exposure to cold, fatigue, wounds or illness."

Now these statements correspond with our experience here. We know that exceptionally hard work will send up the fever admissions among the men exposed to it, especially when proper precautions are not taken (*vide* Nainnaghai figures below).

On Ross Island, in the period December to March, there is usually a strong cool wind blowing, and it is to this that the population ascribe their fever. They said beforehand that when this wind began they would get fever, and they certainly did. At the time I did not think there was an anopheles mosquito on the island, certainly one could never catch them, and even culex was very rare. The wind came direct from the North-East over some hundreds of miles of sea, so that the chances of infected mosquitoes being carried in may be dismissed.

The probability is that both these theories are true, and that direct infection from the mosquito and relapses due to exposure together and unitedly account for the malarial fevers as seen here.

The means of diminishing malaria

Any measures that will diminish the heavy malarial sick-rate are naturally of the greatest

value, and much attention has been paid to this question during the past year.

So far as our present knowledge goes three, or possibly four, methods are supposed, or are likely to be efficacious (always remembering that we are dealing with a malaria-infected population).

These are —

- 1 The destruction of all anopheles mosquitoes
- 2 The prevention of infection of and by anopheles mosquitoes by means of nets, or combustible pastilles
- 3 The dosage of the whole population with quinine to an effective extent
- 4 The keeping of the population "fit," or in such a good state of general health that relapses or recrudescences are unlikely

1 *The destruction of all anopheles mosquitoes*
This, I have no hesitation in saying, under local conditions is impossible. The large area of the Settlement, the dense vegetation, the heavy rainfall and consequent swamps all make such a task impossible of fulfilment.

It may be done over comparatively small areas, and in the older stations, but to do it over the hundred and odd square miles within the Settlement boundaries is not practicable.

But even on a small scale much good may be done, and I propose to describe in detail the results of the efforts made.

The first attempts were made on Viper, a small island accommodating about a thousand convicts, and some two hundred and fifty troops and police.

This island has no streams, its water-supply is from collected rain water, one or two wells, and from a daily ration brought from another station. The island is thoroughly cleared and well drained. Like all other stations the buildings are of wood, and, as a protection against fire, there are wooden fire barrels distributed round all the houses and barracks.

These fire barrels were the main sources from which the mosquitoes came, and early in the year every barrel swarmed with larvæ, and mosquito eggs could always be found. Generally these larvæ and eggs were of the culex variety, but occasionally anopheles were discovered. The work of getting rid of mosquitoes was commenced in June with a few convalescents who were instructed to keep these barrels clean and to pick up cocoanut shells, &c. The results were excellent so far as the number of mosquitoes were concerned. On every hand one got the same response to enquiries, from officials and convicts alike. The mosquitoes were much less numerous, nets were no longer a necessity, and life was rendered much more tolerable in consequence.

At the same time experiments were made with combustible pastilles, so evil-smelling as to be calculated to drive out the mosquitoes from any building in which they were burnt. These

were made of sulphur, charcoal and saltpetre, but were not satisfactory

They were expensive (the cost to burn them twice weekly throughout the Settlement at the scale of one per thousand cubic feet would have been about 10,000 rupees), and they were only temporarily effectual. The general opinion was that so long as they were burning, neither man nor mosquito could exist within their range, but that as soon as they had burnt out sufficiently to permit the inhabitants to return, the mosquitoes returned also.

Following the small Viper experiment and other small experiments elsewhere, a more thorough trial was decided on. In November the Chief Commissioner issued orders forming mosquito brigades in every station, and these commenced operations on December 15th, information and literature, including Ross's book, had previously been widely circulated, and the Petty Officers in charge of the gangs were instructed in their duties. The men of the brigades, numbering in all nearly two hundred, were equipped with carts, tools and dippers for searching purposes. Careful arrangements were made to check the exact sleeping places and occupations of all men reporting sick, and the blood of every fever case was examined microscopically, often more than once.

In some respects the results of these special gangs have been excellent. Mosquitoes everywhere have enormously decreased, in fact in many places a mosquito is quite a rarity and as such is immediately noticed. The exact prevalence in bungalows appears to depend on the interest and enthusiasm of the occupant. Many residents have assured me that they can now sleep without nets or punkahs, and the convicts all tell me that mosquitoes have much diminished.

Besides this the general sanitation of the Settlement has much improved. Drains have been cleared, puddles filled, rubbish removed and undergrowth cut back to a considerable distance.

The improvement in the general cleanliness is most marked, and in this respect alone the mosquito gangs have done much good. But when we examine the effect of these measures on the malarial admissions we do not obtain such encouraging or consistent results.

The results from the principal stations and districts are as follows for the three months the brigades have been working —

ROSS ISLAND

Year	Approximate Strength	Fever admissions, December, January and February
1899-00	660	43
1900-01	698	82
1901-02	735	48
1902-03	718	203

Of this season's admissions, mullths furnished 67 and sweepers 25, 49 admissions came from No 1 barrack and 29 from each of the others.

Government House, the Senior Medical Officer's bungalow, and the Mess which are close to one another, each had 10 fever admissions, whilst Mr Hilton's and Mr Galvin's bungalows, which are side by side, gave 13 and 12 admissions respectively. No other house had anything approaching this number.

These cases are very difficult to explain on the purely mosquito theory. In the patients (boatmen) from the Senior Medical Officer's bungalow distinct parasites were found and in two cases crescents, at that time of the year it was impossible to discover an anopheles on Ross Island.

The patients generally, and many of the residents too, ascribed their fever to the onset of the North-East monsoon which they say chilled them and gave them fever. On the other hand both the areas above named are thickly covered, with vegetation which gives good mosquito cover.

FEMALE JAIL

Year	Strength	Fever admission for 3 months
1899-00	359	140
1900-01	369	109
1901-02	406	80
1902-03	401	168

Here, too, the results are similarly disappointing. It is easy to explain why the female jail should be malarious, but it is not easy to explain why it should have been more malarious this year than usual, when stringent sanitary precautions were exercised, and when half the inhabitants were taking 20 grains of quinine twice daily.

Blood examination—At Ross Hospital the blood of every patient coming to hospital was examined for malarial parasites, whatever his disease may have been.

In all 527* patients were examined, and parasites were found in 136 cases.

These analysed show

Intra cellular hyaline	49 times
" pigmented	36 "
Extra cellular forms	20 "
Crescent	31 "

besides combinations of these varieties.

In many cases crescents were found in enormous numbers, as many as 180 being counted in a single slide. In other cases crescents abounded in the blood of men feeling perfectly well, having normal temperatures and who were anxious to get out of hospital.

ABERDEEN

Period	Malaria admissions
Dec to March	
1899-00	312
1900-01	234
1901-02	70
1902-03	215

* These figures include sick from Aberdeen

Here, too, careful blood examinations were made, but the results are included with those of Haddo Hospital

At the Female Jail the malaria admissions for the three months were —

January	66
February	49
March	33

Miscroscopic examination of the blood gave the following results —

Cases examined	...	212	(all admissions)
Parasites found	.	125	

Varieties —

Hyaline intra cellular	...	47
Intra cellular pigmented		36
Extra cellular	"	26
Crescents	...	10

HADDO.

Fever admissions —

Period	Haddo	Chatham	Phoenix Bay
1899 1900	152	154	186
1900 1901	69	54	92
1901 1902	78	33	58
1902 1903	49	28	49

In these three stations the results are favourable, everywhere there were fewer cases, although in 1902 the population tended to steadily increase. Possibly the inhabitants of these stations are less exposed in the cold season to changes of temperature than most other men, and consequently are more likely to benefit from anti-mosquito efforts.

As in other cases, careful blood examinations were always made, with the following results —

Fever cases examined	194
Parasites found in	173

Varieties of parasites —

Intra cellular Hyaline	101
" Pigmented	23
" Ring forms	21
Extra cellular pigmented	10
Crescents	10
Segmenting forms	6
Flagellæ	2

This blood examination was carried out by Dr Sanyal who ascribes the high parasite rate to the fact that

- 1 Only "fever" cases are included
- 2 There was no prophylactic issue of quinine going on
- 3 No quinine was given to the patients until the blood examination had been made and the diagnosis checked

SOUTHERN DISTRICT

It is in an unhealthy area such as this that the mosquito brigade work is of special interest. Attention was specially directed to Viper, Namunaghai, Dundas Point and Minnie Bay.

Averages are for three years —

Period	VIPER		NAMU NAGHAR		DUNDAS POINT		MINNIE BAY	
	Average	1902-03	Average	1902-03	Average	1902-03	Average	1902-03
December	35	76	101	61	49	26	5	9
January	40	53	75	41	33	35	23	
February	52	64	59	27	43	34	43	19

Of the 129 admissions from Namunaghai in the three months, 83 came from one barrack—the temporary one,—but the firewood cutters (who are always unhealthy) lived in this barrack.

Altogether the blood of 592 fever cases were examined. In 289 of these malarial parasites were discovered.

WIMBERLEY GANJ SUB-DIVISION

Period	Admissions	Strength
1899 00	520	1,480
1900 01	916	1,944
1901 02	811	2,161
1902 03	603	2,352

Here, too, there is a decline in the admission rate as compared with previous years, and that although the population of the Sub-Division has increased.

The results of blood examinations were

Examinations (October to February)	1,062
Parasites found	892
varieties	
Intra-cellular hyaline	851
Extra-cellular	19
Crescents	22

The above tables are of course merely a summary of all the information which has been collected on this subject, but which want of space prevents me from inserting.

This account does not exhaust what has been done in the direction of mosquito brigades.

In the villages, both ticket-of-leave and free, the system has also been inaugurated and men told off to attend to puddles, sanitation and general cleanliness. The effect of this action is bound to be most marked.

I am indebted to Mr Lewis, the Sub Divisional Officer, Ross, for much assistance in connection with the mosquito brigades and for the following information as to local varieties of the insect.

The commonest variety of mosquito in Port Blair is *Culex Fatigans*. It is a house mosquito, breeding in any convenient collection of water and biting at all hours, but especially at night.

The only other known variety of culex locally found is *C. Concolor*, a larger insect than *C. Fatigans* and possessing larvæ of cannibalistic habits.

There is one other small culex found, but it has not yet been identified.

Of the sub-family *Stegomyia* (Theobald) two species are found, namely, *S. Fasciata* and *S. Scutellaria*. Both are very common here, but they do not affect houses as much as the true *culex*.

(To be continued)

THE HEALTH OF THE DISTRICT OF JESSORE, AND HOW TO IMPROVE IT

BY H SEN, M.B.,

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THE question of the health of a district is always of vital interest to its people. It has become specially so in this. According to the last census the district has lost a large percentage of its population. I find the number of deaths has been exceeding the number of births almost every year. I noticed this especially in the Sub-Division of Narail which is supposed to be the healthiest part of the district. I have inspected all the important places of the district, and I found that malaria of a very virulent type has taken a firm hold of it. A deltaic tract once intersected by innumerable streams, many of which in course of time have run out then existence or are fast running it out, throwing their beds high up above the general level, a tract of country naturally of monotonous level and of pure alluvial formation with extensive swamps and dense jungles, having a sub-soil water always at a high level, a rainfall about 63 inches in the year and a mean temperature of 77°F, it has, as might be expected, become a veritable hot-bed of the scourge of the country. Every year malarial fever carries off 57,924 people on the average. The number thus carried away is but a minute fraction of those who are affected by it. And these look more dead than alive. They walk the earth like so many ghosts in the valley of death, the victims of a slowly grinding disease. If I may style Bengal as the "Valley of Death" which it actually is, situated as it is at the mouth of the two largest drainage systems in India, hemmed in by stupendous ranges of mountains on three sides, I may justly call Jessore the bottom of the Valley of Death. All the places in it are not, however, equally bad. I found Kesabpuri, Maheshpuri, Jhenidah and Maguriah to be the unhealthiest places. At Kesabpuri 72.3 per cent of the boys and 70.3 per cent of the adults were affected with enlarged spleen. Marshes, jungles, densely shaded and unclean orchards, ditches, ponds and hollows all shaded over by leafy trees, and a dying river close by are the characteristic feature of the place. At Maheshpuri I found 78.94 per cent of the boys had spleen. The town looked a most pitiable sight with its tumbled-down, deserted, jungle-covered, pucca buildings, once the abode of a healthy and a happy people but now the haunts of wild animals and reptiles. When I saw the place I

could give only one advice to the people and that was to fly from it. At Jhenidah I found cent per cent of the children had spleen. The town stands on the bank of a dead river, it is encumbered with dark and dense jungles, cut up in every possible way with ditches and pits all over, every elevation having a corresponding depression, badly built, badly drained, thickly shaded and completely obstructed, it seems to me that both nature and man have conspired together to bring death and destruction on the ill-fated town. What an amount of suffering the people there must be undergoing, but they have got to thank themselves for much of it. At Narail I found 45 per cent of the children had spleen. The Mahomedans were the worst sufferers, as is the case all over the district. On comparing the deaths with the births here I found that the former exceeded the latter every year since 1899, from which I start. The figures are given below —

	Deaths	Births
1899	5,194	4,235
1900	4,168	4,96
1901	5,980	3,668
1902	5,286	3,804
1903 (up to 9th June)	1,978	1,149

Narail is reckoned to be the healthiest place in the district. These figures, however, speak otherwise. If Narail be the healthiest part of the district, how very unhealthy then the district must be. At Sreedharpur I found 33.33 per cent of the boys had spleen. The place is not so unhealthy as other parts of the district. There is no dead river close to it. At Raigram 36 per cent of the boys had spleen. Again a better figure, for the place is situated on a river not yet dead.

At Maguriah I found 74.62 per cent of the ordinary children belonging to the cultivating class, and 18.8 and 27.27 per cent of the school boys, classified according to their ages, had enlarged spleens. The school boys suffer less than the boys belonging to the cultivating class for evident reasons, the former belonging to the well-to-do-families and having a less exposed life. This part of the district seems to be much more open, and at any rate is blessed with a river on one side which is still alive, but there is a dead one also on the other side.

At Bongaon I found 25 per cent of the total examined, adult and children, had enlarged spleens. The percentage among the adults was 34.28, and that among the children 21.73. Bongaon would appear to possess a fairly good health.

At Kotechandpuri, where I examined 408 children, I found 104 had enlarged spleens, or, 23.63 per cent. It would appear to be, when compared with the others, a very fairly healthy place. In the Jessore town I could examine only the boys of the Government School, and found that 27.12 per cent of them had enlarged spleens. The percentage among the Hindu

boys was 1975, and that among the Mahomedans 4024. This notwithstanding its water works and a regular system of drainage.

I now come to Lohagoriah, really the healthiest spot in the district. I found only 37 per cent of the boys, all however belonging to the school, had enlarged spleens, almost all of them were Hindus and belonged to well-to-do families. At Lakhipasa, the village opposite separated from Lohagoriah by a narrow river, 1607 of the boys had spleen. The case of Lohagoriah is very significant. Because of the two tidal rivers—the big Madhumati on one side and the Nabaganga on the other, the strip of country lying between them is still keeping a health unknown elsewhere in the district. A river has a great influence upon the health of a place, a dead river is its death as a living one is its life, when we think of the general health of the district, taking into consideration the facts cursorily viewed above, we are forced to come to the conclusion that the future of the district is indeed very gloomy. The whole population of the district is saturated more or less with malaria. The agricultural classes, which form the majority of the population, from the very nature of their occupation necessitating them to lead an exposed life and their general straitened circumstances, are the worst affected. Of the two castes, the Mahomedans and Hindus, the former are again worse than the latter. People with industrial pursuits, whose number, however, is very small, living mostly an indoor life and in a town, are better off than the cultivators. Men in service, zemindars, traders and moneyed men generally who are best off economically keep the best health, but even they are not exempt, their pale and sallow complexion, flabby constitution and want of energy and of real manliness show that they are equal victims to a disease which is universally spread over the district. If things are left as they are, it may be, the district will be depopulated within the course of the next few years—a terrible thing to contemplate. To avoid such a catastrophe, well-thought out scientific measures ought to be adopted. They need not necessarily be very costly. To improve the general health, two different sets of measures should be adopted, one concerning individual and personal hygiene and the other concerning local hygiene. As far as the former is concerned, to effect any real good, the mass must be educated into the principles of health and disease, they should broadly know how diseases originate and spread and how they can be eradicated, they might pick up this knowledge while at school, or the thing might be preached to them. We are speaking of malaria now. To keep free from it is not a difficult task. When we know that mosquitoes propagate the disease, all we have got to do is to protect ourselves from their attacks, and this is easily done. Never keep the body uncovered, specially at night. Smear

all exposed parts with oil, preferably with kerosene oil, sleep under a mosquito curtain, keep the sleeping room clear off all encumbrances, fumigate it with sulphur every night. When the poison has already entered the system or is very likely to do so, take two grains of quinine daily, this need be done only for about three months. Three drachms of quinine a year would cost only eight annas per head. As to local hygiene we have seen above that Lohagoriah has the best of health, it is Nature herself that has conferred the blessing upon it. Kotchandpur, too, has a fairly good health, here man has made it so. Its rows of pucca buildings, well metalled roads, the open spaces, absence of dirty ditches and ponds and comparative rarity of the vegetable growth in the midst of the town, the industrial pursuits of its people not necessitating them to expose themselves to the inclemency of the weather. All these have made it what it is. A dead river and the inertness and stupidity of man have ruined Maheshpur, Kesabpur and Jhenidah. We have learnt, then, this lesson that Nature may and does keep certain places healthy, and again ruins them by withdrawing her favour from them. When she is so inclined, man cannot force her to bestow the same blessings again. When Jessore had its tidal rivers intersecting it in every direction, health and happiness ruled all over, as it is even now the case at Barisal. The rivers are now no more. They have done their work and are now lying dead. It is not within the power of man to bring them back to life again. The blessings due to the presence of a flowing river, Jessore will not know again, all schemes of opening up the old river, or cutting new channels are bound to fail. Any money invested on such schemes with a view to improve the health of the district will be simply wasted. Man cannot force Nature to do over again a thing against her will, but he can do much in other directions, leaving the rivers as they are. As I have said above, man himself has conspired with Nature to bring ruin and death upon himself. For look at Jhenidah, Maheshpur, Kesabpur, etc., why should the people live in the midst of jungles while there are so many open spaces about? Why should they cut pits and ditches close to their habitations? Why should they grow jungle around their huts and cottages?

We know it to be a fact that in the unhealthiest district where the mortality from fever reaches the terrible figure of 500 per mille among the general population, in the jail situated in its very heart, the mortality from the same cause never rises over 20 per mille. This is a lesson which we should take to heart and act up to. For there we can make the district as healthy as possible under the circumstances. In this district the mortality from fever among the free population is about 325 mille, and that among the jail population about 28 per mille. Every year some 57,000 persons die of fever in

the district, but only 5,040 would die if they live under circumstances as obtain in our jails. What an enormous mortality can be prevented if proper sanitary measures are adopted. We simply need to instruct the people, or force them to live in the style as our prisoners live. They should build their houses in clear, open, well-ventilated and well-drained places, live in huts and cottages having a high and dry floor, clothe themselves properly according to seasons, take their meals at regular intervals and above all, drink nothing but boiled water. To live like this would not cost them much. The people will do well to altogether desert the village which from the accumulation of filth of ages, the stupidity of man and from the presence of dead river are past all redemption from the sanitary point of view. Places like Maheshpur, Kesabpur and Jhenidah should be vacated, and the people should remove elsewhere. All new towns and villages should be laid on a particular model plan, the houses or huts should be built in lines separated by broad streets intersecting one another. The earth required to build a house should be dug from one or two particular places at a distance from the *busti*, each pit thus cut would make a fine tank, and if two are dug, one should be kept reserved for supply of drinking water, and the other for purposes of ablution, etc. Nobody should be allowed to grow a tree wherever he lives. All orchards should be at a safe distance, proper conservancy arrangements should be made, when the people cannot afford to have a house latrine, field latrines should be provided, two for each village, while one is in use the other should be brought under cultivation, each being thus used alternately, there should be fixed places where to bury and bury dead bodies. The Mahomedans should not be allowed to bury their dead in their compounds, or on the banks of the tanks, as is then universal practice, nor the Hindus to roast their bodies and stake them in every nala or river, every village should have one or two open spaces for public amusement, and there should be a common cattle-pen at a safe distance for the accommodation of their flocks, each village should have a map showing the different places mentioned above, so that an inspecting officer might see the whole at a glance, and note the defects where they exist. As to the old villages and towns which are not yet passed reclamation, things should be put into order as best as they can, and according to the means of the people. The ideal pictured above should be acted up to as far as possible in every case. The first thing to do would be to clear all the jungles and orchards from the heart of a village or a town. This the people must be made to do by a special law, if required, and they should not be allowed to dig a pit or plant a tree wherever they like. One or two reserved tanks or wells should be kept in each village according to its size, and a burial ground and a burning ghât

should be fixed for each. By adopting such measures as these the people even in Jessore can live a healthy and a happy life. But to live a civilised life they must help themselves. The plans described above should be drawn under the supervision of the District Magistrate, the District Medical Officer, and the District Engineer, but the actual works should be done or paid for by the people themselves. In special cases the District Board might be asked for help. Each village union should be held responsible for the regular carrying out of works when once started. I personally do not believe much in the efficacy of big schemes for water works, or an elaborate system of drainage for a moffusil town in an agricultural district like Jessore.

In short, then, my suggestions are —

(1) That the people should be induced to remove from old sites, which from natural causes and neglect and stupidity of men have become quite uninhabitable, many an ancient town like Delhi has had to change its site for this very reason.

(2) Every new town, village or *bustee* should be laid on a standard plan drawn on sanitary lines. There should be one or two main streets with cross ones, according to its size. Each hut or cottage or building, which should be all in rows, should have open spaces round them, where vegetables for the kitchen only may be raised, or flower-beds laid. There should be one or two reserved tanks or wells for drinking water, two field latrines for those who cannot afford to keep house latrines. There should be fixed places where to bury and where to burn the dead bodies, open spaces for games and amusements and a general cattle pen, a little away from the habitations with separate folds for the different families.

(3) All existing towns, villages and *bustees* which have not yet become quite uninhabitable, and which can be at a moderate cost put right, the first thing to do would be to clear all orchards, jungles, leafy trees and bushes, fill in all gaps and hollows, level the ground, excavate or sink a tank or well for drinking water, mark out a burial ground, a burning ghât and provide field latrines. If the people do not submit to these innovations, they should be made to do so by passing special laws for the purpose.

(4) The people should be educated to improve their standard of life. They should live a more decent, a more regular and a more disciplined life. They should clothe themselves properly, should never remain naked specially at night, should take less of rice and crude vegetables and more of wheat, pulse and meat, if possible, rub oil daily to all exposed parts of the body, drink nothing but boiled water, sleep on a dry floor, on a *machan* or a straw mattress which even the poorest man can afford to get, keep clean their houses and fumigate them with sulphur every night.

By adopting the measures noted and living a life as described above, people at Jessore, and for the matter of that, of Bengal, may yet expect to live a fairly happy and healthy life. To tell the truth, however, Bengal can never be made the abode of a really manly race of men, for Nature is altogether against her.

A Mirror of Hospital Practice.

NOTES ON A CASE OF PYELITIS DUE TO THE BACILLUS COLI COMMUNIS

By D. McCAY,

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COLI pyelitis is a condition of the kidneys which was described in the first instance by Holt. In his text-book on Children's Diseases he mentions a case of pyelitis in which the colon bacillus was present in the urine, and recommends citrate of potash as the treatment.

Dr. Thomson of Edinburgh had noted a few cases of the same kind in children, and treated the disease by neutralising the urine with citrate of potash.

The case, which I wish to record now, occurred when I was at home at the beginning of 1902, and I hope it may serve to throw some light on the nature of certain not uncommon, but ill-understood, fevers in children.

The patient, a little girl, seven years old, had been observed for some days not to be looking so well as usual, she was constipated, but no blood or mucus was passed per rectum.

On the 19th December 1901, she took ill suddenly with pain in left side extending down the leg. She was put to bed, and a poultice applied which relieved the pain. The next day, her condition not having improved, the family physician was called in, who found the patient in a febrile condition, temperature 101° , tongue coated, thirst, tenderness over left lumbar and inguinal regions and constipation. Castor oil and an antifebrile mixture were prescribed.

The temperature rose gradually, reaching 105° on the 25th December. Pulse 120. The patient suffered a good deal from headache, thirst and constipation. The temperature showed great variations, varying as much as four degrees in an hour. Pus was suspected, but could not be localised, nothing could be felt in the regions of tenderness.

The urine showed a trace of albumin, was acid in reaction, and was not examined for pus, abdomen slightly tympanitic.

From 25th to 29th December the patient grew worse gradually, tongue became dry and brown, great thirst, loss of appetite and rapid emaciation were present. There was a certain amount of irritation of the urinary bladder

shown by the increased frequency of micturition. The quantity of urine passed exceeded the normal. Constipation was still a prominent symptom, castor oil being administered on two occasions.

A consultation had been held on December 24th, and the case was thought to be a localized peritonitis or possibly typhoid fever. Again on December the 30th another consultation was held, but no definite diagnosis was made. Similarly on January 6th, 1902, another consultation with another consultant was held when the diagnosis was thought to lie between an obscure case of typhoid and influenza.

During the first eighteen days of January, as shown by the temperature chart, the patient had high fever of an intermittent type, and gradually lost ground.

The weakness and emaciation increased, she suffered from sickness and vomiting. The temperature was very jerky, varying daily between 96° and 106° , chills occurred whenever the temperature fell below 100° .

During this time the bowels were moved only six times, and then only in response to medicine.

I heard of the case for the first time on the evening of the 16th January, the family physician giving me an outline of its signs and symptoms, and asked if I had any suggestions to make. Seeing that the temperature pointed so suggestively to pus somewhere I suggested a further examination of the urine and blood bacteriologically and chemically, at the same time I said that it looked very like a case of coli pyelitis, (as described by Holt and Thomson). I therefore asked the doctor to try the patient on citrate of potash, thus he gave the following morning, and inside twenty-four hours the temperature had fallen to normal and never rose afterwards.

On January 18th, I saw the patient for the first time. She had been ill for thirty days. The following was the condition—

Patient was very weak, marked anaemia, greatly emaciated, semi-somnolent in a more or less dreamy condition, pulse quick and feeble.

There was pain and tenderness on pressure over both kidney regions, but more marked on left side. A certain amount of oedema on the forehead and below the eyelids, with pitting on pressure, was present. The patient was very low, reflexes hard to obtain, and the strength almost gone. Temperature then normal.

The next day no marked change took place in her condition further than the temperature remaining about normal.

On the 20th January the result of the examination of the urine and blood fully confirmed the diagnosis. The blood gave no Widal reaction, while the urine showed a moderately large quantity of pus, and abundant, very lively coli bacilli.

The patient was kept on citrate of potash, the dose being increased up to twenty grains to keep the urine alkaline. This treatment had

the effect of keeping the temperature normal, but as might be expected, had no effect on the number and mobility of the bacilli.

I worked on the case for some time in the bacteriological laboratory of Queen's College, Belfast, and had the urine sent to me every third day, and was therefore able to note the changes taking place in it.

At first, while the patient was on citrate of potash only, although the amount of pus diminished, the bacilli showed very little change. They grew rapidly and well on the different media and were very mobile, so one was forced to the conclusion that the citrate of potash treatment was not specific, but that it, in some way, neutralised the effects of the toxin of the coli bacillus in the blood, without getting rid of the bacilli themselves. The question then was to get a drug, which would be excreted by the kidneys as an antiseptic, strong enough to kill off the bacilli. Urotropin seemed to give the most promise of success.

The patient was therefore put on 5-grain doses of urotropin three times a day with very happy results. At once the bacilli seemed to be less lively, and the number of colonies, from the same quantity of urine as used in former growths, seemed to be much fewer in number and weaker in growth. In a few days from the commencement of the administration of the drug, although plenty of bacilli were still to be seen in specimens of the urine, they were now hardly able to move across the field of the microscope, and cultures were most difficult to obtain, a few days later they had entirely disappeared from the urine.

The urotropin dose was reduced to two and a half grains on the 24th February, pus and bacilli being entirely absent.

The patient made a comparatively fast recovery, when the length and severity of the illness is remembered.

In connection with this case and its treatment with urotropin, I should like to state that, in another case of the same disease—which was treated with the citrate of potash alone—four and a half months from the onset of the disease, the patient's urine still showed abundant coli bacilli, and the patient was liable to a rise of temperature whenever the urine was allowed to become acid.

Most of the cases on record of this disease have occurred in children. There is usually a history of constipation, or passage of blood or mucus by the bowel. Probably the injury to the mucous membrane of the bowel, brought about by chronic constipation, allows of the invasion of the urinary tract by the colon bacillus the diseased condition, thus set up, is no mere catarrh, but, as the general clinical picture shows, it is more of the nature of a toxæmia which will carry off the patient unless its nature is diagnosed and the proper remedies given.

The obvious deduction from the records of this disease is the importance, in all obscure feverish attacks in children (so-called gastric fever), of a thorough examination of the urine both chemically and bacteriologically.

SUICIDAL HANGING DEATHS FROM THE SECONDARY EFFECTS

BY J T CALVERT, M B (LOND),

MAJOR, I M S,

Civil Surgeon, Cuttack

THE following cases both having been the subject of a strict magisterial enquiry, and one having been under observation throughout, seem of sufficient medico-legal interest to be put on record.

Case I—P B, Hindu female, aged 22 years, a strong powerful woman, a prostitute, whilst a prisoner in the Cuttack Jail quarrelled with the female convict warder. In consequence of this quarrel she, on the evening of the 6th September 1902, made an attempt to hang herself. Making a rope by tying up her cotton *saree*, she threw a noose round her neck, fastened the ends of the rope to the top bar of an Ahpore pattern cubicle, in which she was confined, and sat down. An alarm was raised, and almost immediately afterwards the jailor entered the ward, found the prisoner suspended in a sitting posture, and took her down. At this time she was partially unconscious, was groaning, and breathing in an irregular manner. Water was dashed in her face which revived her, and some at her request was given her to drink. When seen by the hospital assistant her body was cold, breathing hurried, and pulse rapid. He administered stimulants, and put her into a warm bed. I saw the prisoner, on my return from camp, next morning. She was then exceedingly restless, with a soft rapid pulse, hurried respiration, and a cold and clammy skin. She was quite conscious, conversed rationally in a natural voice, and there was no difficulty in swallowing. On auscultation, moist râles and soft crepitations, were heard over both lungs, front and back. In spite of treatment the temperature remained subnormal, the breathing grew shallower and more difficult, the pulse rate increased, the restlessness continued, and she died at 7-30 P.M. on the evening of the 7th September, or 24 hours after she was taken down.

Post-mortem appearances—Twenty hours after death. Rigor mortis absent. Oblique ligature mark on neck, crossing in front over the upper part of the thyroid cartilage, varying in width from $\frac{1}{4}$ "—1". Skin over ligature mark abraded, not depressed. No extravasation of blood beneath, no swelling of neck. Frothy mucous fluid was issuing from both nostrils. There was a small amount of blood-stained fluid in both pleural cavities. The mucous membrane of the trachea and larger bronchi was congested.

and covered with fine bloody mucous froth, the smaller bronchi were almost choked with it. The lungs were congested and on pressure oozed bloody mucous fluid. There were mixed fibrinous and dark blood clots in both ventricles and in the right auricle, and fibrinous clots in both the aorta and pulmonary vessels. The brain was congested, but there were no hæmorrhage.

Case II—U B, Hindu widow, aged 25 years, had a miscarriage. She demanded means of support from her paramour, which were refused, and in consequence she hung herself on a bamboo pole at about 6 P.M. on the evening of the 10th June 1903. When cut down shortly afterwards by her neighbours she is said to have been unconscious. Her body was rubbed, and she was given water to revive her. On recovery she appears to have been taken due care of. Subsequently on the 12th June she was removed from the village in a dhooly to the thana at the subdivisional headquarters, a distance of ten miles. On arrival at the thana she is said to have been conscious, but died suddenly almost immediately afterwards at 4 P.M., or about 46 hours after she was cut down.

Post-mortem appearances—The *post-mortem* examination was held by the Senior Grade Civil Hospital Assistant at the subdivision 16 hours after death. There was a ligature mark round the upper third of the neck, no extravasation of blood beneath it. The larynx and trachea contained a small quantity of frothy mucous. The lungs were congested. Dark fluid blood was found in the cavities of the heart on both sides, other organs congested. The uterus was enlarged $5'' \times 3\frac{1}{2}''$ and contained about half an ounce of clotted blood. Brain is said to have been congested, no hæmorrhage. This case was thoroughly sifted, but no fresh facts were discovered after a most careful enquiry.

Remarks—Stevenson, in Taylor's Medical Jurisprudence, mentions three similar cases when death took place 19 hours, 24 hours, and on the second day after the rescue from hanging. He remarks "in hanging as well as in drowning, therefore, a person may in the first instance recover, but subsequently die in spite of medical treatment, probably from the depressing effects produced on the nervous and muscular systems by the circulation of unœrated blood."

A CASE OF SUICIDAL HANGING,—DEATH AFTER NINE DAYS

BY ASST SURGN H N GHOSH, M B,

Rampore Boalia

KHATJA, Mahomedan female, married, *æt* 12 years, suffering from melancholia for the last one month, living with her father lately, for three days removed to the husband's place. On the morning of the 9th February 1903 she was found hanging from the branch of a tree near

the house by the mother-in-law, whose screams drew the attention of a male member of the house, who came up quickly and cut the rope and brought down the body. From the statement made by the friends it could be ascertained that the feet were six inches above the ground, the body was hanging quietly, and there were two turns of rope round the neck. The breath, which was suspended, was started afresh, (after about ten minutes of total arrest, it is believed,) by the friends kneading her chest, but the consciousness was never restored. The Police then got hold of the case, and she was sent to the Rampore Boalia Hospital for examination and treatment.

Condition on admission (on the 11th)—She was absolutely unconscious, reflexes present, heart sounds normal, respirations usual, bowels not moved for the last two days. Has fullness of the temporal veins.

Progress of the case—She was treated by calomel and croton oil to start with, followed by Mist Sennæ Co, and cold application to the head. She became gradually worse and developed convulsions, with steady wrinkling of the corrugator supercilii (a symptom I have never missed in any case of meningitis, and which appears, as it did in the present case, in the very early stage), stiff neck, moaning, and fullness of the vessels of the forehead and temple, and died on the 15th night.

Post-mortem—Cerebral meningitis and hypostatic congestion of the lungs.

Remarks—The resuscitation after ten minutes of suspended breath shows that cardiac death happened a considerable time after the stoppage of breathing, and the kneading of the chest not only restored the respiration, but, as a mechanical stimulus, revived the heart. The prolonged venous stasis in this case must have occasioned an abnormal rise of interstitial pressure in the cranium, and started the inflammation which brought about her end.

A CASE OF MEDICO-LEGAL INTEREST

BY F F ELWES, M B (LOND.),

CAPTAIN, I M S,

Government General Hospital, Madras

THE following case is perhaps worthy of record on account of its importance from a medico-legal aspect.

S, Hindu male, *æt* 45, was admitted into the General Hospital, Madras, about 2 P.M. on August 20th, 1903, with a history of having fallen two hours previously from the top of a workshop to the ground, a distance of about 30 feet. He was picked up unconscious and brought to hospital, and was said to have had some bleeding from the mouth and right ear. The patient, when seen by me shortly after admission, was lying on his back, with upper and lower limbs extended, and

head turned towards the right. Temperature normal, respirations slow, slightly stertorous, pulse 68 per min., fair volume and regular. Lower limbs and left arm flaccid, but on raising the right arm distinct though slight muscular resistance was felt. Whilst being examined, however, the patient moved both the right arm and left hand.

The right pupil was widely dilated and did not react to light. Corneal reflex absent. On the right side of the head immediately above, and in front of the ear, extending over the temporo-parietal region, was a diffuse ill-defined, almost puffy swelling, with slight abrasion of the skin over it. Both upper and lower eyelids of the left eye were immensely swollen and dark-blue, indeed they were so swollen, and inverted, that the pupil of the left eye could not be examined. Over the left malar bone and side of the face some irregular swelling was present, and on the right arm and right knee a few small abrasions. A few drops of blood trickled from the right ear. On moving the head, for purposes of examination, respirations became irregular, and even ceased for several seconds at a time. The patient was thought to be suffering from fracture of the base of skull with possibly some intracranial hæmorrhage at the base of the brain, but the localizing symptoms not being sufficiently definite to warrant trephining, the usual treatment of ice bag to the head, calomel purge, etc., was adopted. The temperature gradually rose reaching 103° just before death, which occurred at 4-30 A.M. the following morning. The pulse showed no marked alteration, in volume or frequency, until shortly before death.

Necropsy—Captain T. H. Symons, I.M.S., acting Pathologist to the Hospital, performed the autopsy, and the following notes are extracted from his report—

"Skull thick, as also the dura mater, which was adherent to the cortex of the brain near superior longitudinal fissure. No fracture. Projections of frontal orbital plates very prominent. Some necrosis of occipital bone near torcular Herophili and commencing in petrous bone of right temporal. Cortex of brain congested, base anæmic. Gumma in left inferior frontal lobe, with a hæmorrhage into it, the size of a small lime. Ventricles empty.

"Intestines—structures in descending colon six inches long and sigmoid one and a half inches, would not admit intestinal scissors. No ulceration of surface."

The interest of this case lies in the conditions found *post-mortem*, for on reviewing these, it would appear that death, instead of being caused by an accidental fall as the history and symptoms suggested, was in reality due to syphilis, for the man was suffering from syphilitic lesions of the brain, meninges, and occipital bone, and it was probably the hæmorrhage into the gumma in the brain which was at all events the primary

cause of his death. Consciousness probably being lost before the fall occurred.

CASES FROM THE CROSSTHWAITE HOSPITAL, NAINI TAL

BY MAJOR J. M. CRAWFORD, I.M.S.,

Civil Surgeon, Naini Tal

CASE No I

Necrosis of Lower Jaw

GUJE SINGH, Hindu male, 5 years, was brought to hospital on 13th May, 1902, suffering from necrosis of the lower jaw, which was said to have commenced ten months or so previously.

On examination there was considerable swelling of the lower part of the face, the mouth which was open could not be closed. There was a bad smell emanating from it and continual dribbling of saliva. He was much emaciated as he was said to be unable to swallow, and his face had an anxious, drawn expression.

On looking inside the mouth it was seen quite plainly that a large portion of the lower jaw was bare and necrosed, the dead bone having a peculiar greenish colour.

Chloroform was administered, and the lower jaw, including the angles but not the ascending ramus, was found to be lying loose in the mouth and was easily removed, the fingers being quite sufficient to sever it from the few adhesions that remained.

There was no bleeding during the operation (if it could be called one). The swelling quickly subsided, and the saliva stopped dribbling. The boy took food readily as soon as it was offered him, and his face quickly lost its anxious, drawn expression. He was discharged on 16th May, three days after his admission. As he was brought from the interior of Gairwal, I have been unable to trace his subsequent history.

CASE No II

Contracted Pelvis Poirio's Operation

SURAJI, Hindu female, 15 years, was brought to hospital on 17th May, 1902. She was said to have been in labour for the past 48 hours. On examination the foetal heart could not be heard, the ramus of the pubes were so much approximated that three fingers could with difficulty be introduced into the vagina, and all the diameters of the pelvis were contracted. Some shreds of membrane were hanging out of the vagina, the os appeared to be fully dilated, and the head appeared to be free above the brim of the pelvis. The girl was in a very low condition with a quick and rapid pulse.

Under chloroform Poirio's operation was performed, a dead full-time child being extracted. The stump of the uterus was ligatured with a piece of drainage tube, and kept in position with a couple of steel knitting needles. Ether was injected hypodermically both before and after the operation.

The ligature was removed on the fourth, and the needles on the sixth, day after the operation. The temperature never rose above 101.4° , and only on four occasions was it above 100° . There was never any abdominal distension, and she made an uneventful recovery.

She is now (some fifteen months after the operation) living in Naini Tal and enjoys the best of health.

CASE No III

Fibro-Enchondroma

Jhupli, Hindu female, 40 years, came to hospital on 27th March 1903, complaining of great difficulty in swallowing and breathing due to a swelling on the front of the neck, which first appeared about two years ago and had been steadily increasing in size ever since.

The woman was much emaciated, and the tumour, which was about the size of a large apple, was very hard with ill-defined margins, and firmly adherent to the front of the trachea and surrounding tissues, and evidently caused great dyspnoea and dysphagia.

Four days later (on April 1st) she returned to hospital with the dyspnoea very much increased, and as she was now anxious to be operated on, the tumour was removed. On account of the dyspnoea considerable difficulty was experienced in administering the chloroform, and the operation had to be somewhat hurriedly performed in consequence.

The tumour, which was quite bloodless, was firmly adherent to the trachea, surrounding deep fascia and the sheaths of the large vessels, from which it was dissected off with very little hæmorrhage, the small amount of bleeding much facilitating matters.

The dyspnoea disappeared entirely after the operation, the dysphagia three days later, the wound healed by first intention, and she was discharged from hospital on the eleventh day apparently quite cured.

She died at her home six weeks later from an attack of bronchitis.

On dissection the tumour was found to consist of very dense and hard fibrous tissue, with a hard cartilaginous core.

CASE No IV

Emphyema

Sobia, Hindu male, 19 years, was admitted to hospital on 4th April, 1903. He stated that about a month previously he had suffered from high fever and a pain in the left side of his chest, but that he never had any cough, that he now has fever every evening and he cannot lie on to his left side, and suffers from difficulty of breathing.

On examination—The patient was much emaciated, there was marked dullness over the lower and posterior part of the left lung, over which area neither breath sounds nor vocal fremitus could be heard, there was marked

dyspnoea. The apex beat of the heart was displaced about $1\frac{1}{2}$ inches to the right. Paracentesis was performed, and about sixteen ounces of semi-purulent fluid were withdrawn from the left pleural cavity.

The temperature remained normal for the next 24 hours, and the dyspnoea disappeared, after which there was a progressive evening rise (with morning remissions to normal) till the sixth evening when it reached 104° , and he now complained of a troublesome cough.

On the seventh day (10th April) under chloroform about one inch of the sixth rib was removed, and rather more than a pint of pus was evacuated from the left pleural cavity, a large drainage tube being inserted. For the following two days the dressings were frequently soaked with pus, but the temperature remained normal, for the next 10 days there was an evening rise of about 101° , so the pleura was irrigated daily. After this the discharge gradually lessened, and he began to put on flesh. He was discharged cured on the 4th of July.

CASE No V

Irreducible Inguinal Hernia

Chickkoo, Hindu male, 14 years, was admitted on 25th April, 1903, with a large inguinal hernia which was said to have been first noticed about four years previously, but had lately grown very much larger. Formerly it used to go back of itself, but latterly it could not be replaced, and had increased very much in size, and for the past three days it had been very painful. There was no history of an injury.

On examination, the hernia appeared to be painful, the testicle also was enlarged and painful, but there were none of the usual signs of strangulation.

On the 26th, under chloroform, taxis was tried without result, so the sac was opened, the hernia was found to consist of several coils of intestine matted together, apparently the result of an old inflammation. There were no signs of recent inflammation, nothing approaching a partial strangulation from adhesions could be found. As the hernia could not be replaced through the canal, the canal was enlarged, and it was replaced *en masse*. The sac was divided about its middle, and the upper part was twisted and invaginated in the canal being kept in position by sutures. The lower end of the sac was dissected out of the scrotum, and the wound stitched up. There was no rise in temperature, the bowels acted twice freely on the third day, and the wound had completely healed by 3rd May (eighth day), on which date the sutures were removed, and he left the hospital on the 12th May. The edges of the canal appeared to be firmly welded together, and there was no impulse or bulging at the site of the scar. As this case came from the interior of Garhwal, it has not been possible to get any information regarding his subsequent history.

CASE No VI

Osteo-malacia, contracted pelvis, Porro's operation

Amiran, Musalman female, 30 years, was brought to hospital at 12 noon on the 10th July, 1903, said to have been in labour for the past two days

Previous history—She has three living healthy children, aged respectively, 12, 7 and 4 years. She had no difficulty in her previous labours, but since the birth of the youngest child she suffered incessantly from backaches, and her back has gradually become deformed and her knees stiff and contracted

On examination—Her back was bent, her knees flexed with a very limited amount of movement at the knee joint, abdomen pendulous, pulse 70, very compressible, the uterine soufflé could be heard distinctly, and the foetal heart could with difficulty be made out below and to the left of the umbilicus. Some shreds of membrane were hanging out from the vagina, and the pubic rami were so closely approximated that two fingers could with difficulty be introduced between them, the head was presenting and the femur prolapsed, feeble pulsation could be felt in the cord, all the diameters of the pelvis appeared very much contracted so that the head could not engage in the brim. During a pain the head did not advance at all, and the pulsation in the cord became very faint

Under chloroform Porro's operation was performed at 1-30 P.M. There was a considerable gush of blood on incising the uterus, as the placenta was situated on its anterior segment. The child, when removed from the womb, appeared to be asphyxiated, but was brought round by artificial respiration

After the operation the pulse, which had become very feeble, rapidly improved. There was a daily rise in temperature for the first ten days, the maximum, 102.4, being reached on the seventh day, there was also some pain at the seat of the wound, but there was never any distension of the abdomen. After the second day she insisted on nursing the child which thrived well with the aid of occasional bottles. Her recovery after this was uneventful, and she was discharged from hospital on the 23rd August. She might have left ten days or so earlier had she desired to do so

NOTES ON CONTINENTAL EYE CLINICS

By CAPTAIN R. H. ELLIOT, F.R.C.S., I.M.S.

ROTTERDAM—I visited the Rotterdam Eye-hospital, which is supported by municipal and provincial funds, and by voluntary subscriptions, there are 5,000 new out-patients yearly

The hospital is very clean, and its arrangements are modern and good, it has 70 beds

Cataract—de Haas has made 2,100 extractions in 40 years' work, and has abandoned the simple operation because of the danger of iris-prolapse

The cocaine is dissolved in Hyd. Perchlor solution (1/1000), and a drop of the solution is always put into the opposite eye as well before extraction. The instruments are soaked for some time in absolute alcohol, except the knife and cystitome, which are merely dipped therein, all are then wiped on sterilised towels, and laid out on a sterilised glass plate. The incision is sclero-corneal and free, the lens is delivered with the aid of two spoons used for pressure and counter-pressure, cortex is delivered by manipulation, but de Haas does not seem to trouble much about clearing the chamber, dressings are kept in place by a triangular bandage, de Haas has no assistant during the operation and uses a strong spring speculum without a stop, which opens the lids widely and forcibly, he has very few vitreous escapes, and seldom finds the edges of his iris incision prolapse into the wound, even when this does occur, he finds the symptoms much less serious than those accompanying prolapse after the simple operation, de Haas lays stress on the important rôle of the after-treatment

In a case of extensive sclero-corneal wound, de Haas used an ingenious manoeuvre to examine the eye without loss of vitreous from muscular action, seizing the loose skin of each lid in a forefinger and thumb, he pulled the lids forward and apart, thus freely exposing the globe, whilst the lids were effectually prevented from compressing the eye, meantime an assistant cocainised the eye, etc

For *Glaucoma* de Haas uses a wide and peripheral iridectomy, and rarely resorts to sclerotomy, he has used *one single pair* of scissors (bent on the flat) for over 5,000 iridectomies, always cleaning them himself

He has found dilatation with sounds after slitting the upper canaliculus a satisfactory treatment for *Obstruction of the Nasal Duct*, but insists that *large probes* must be used

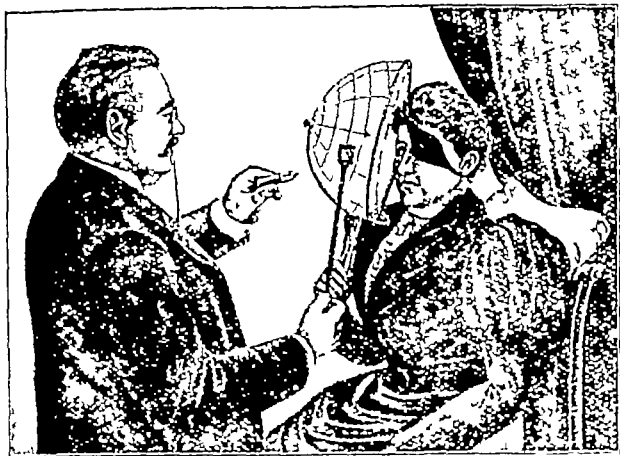
Small gas-geysers (made by Fletcher Russell & Co of Warrington) placed above the wash-hand basins provide hot water at any time in the operating and dressing-rooms, in less than a minute. They are extensively used in many other clinics I have seen

There is a special Magnet-room, provided with an operating table, etc. Two arms attached to the table, and adjustable at any desired point, carry an electric lamp and a strong biconvex lens, thus enabling a powerful light to be thrown on the eye if need be. A Volkmann's electro-magnet is swung over an operating table, on a universal joint attached to a moveable arm which is hinged to the wall (*vide drawings*), a weight exactly counterpoises the magnet which thus remains at rest in any position, and which can be easily approached to the patient's face without in the least disturbing him

A number of points of different shapes are adjustable to the magnet by screwing on. Volkmann's magnet is said to be constructed on more scientific lines than any other, the concen-

tiation of the magnetic force having been particularly studied in its construction, it is consequently very powerful

For the rapid examination of the visual field, de Haas finds Dr. Ascher's transparent perimeter



very valuable (*vide* diagram), it may be obtained from "Optisches Institut von F. Renninger, Frankfurt sui Maine, Germany" It is a simple handy clinical aid, but is unsuited for the accurate mapping of small scotomata

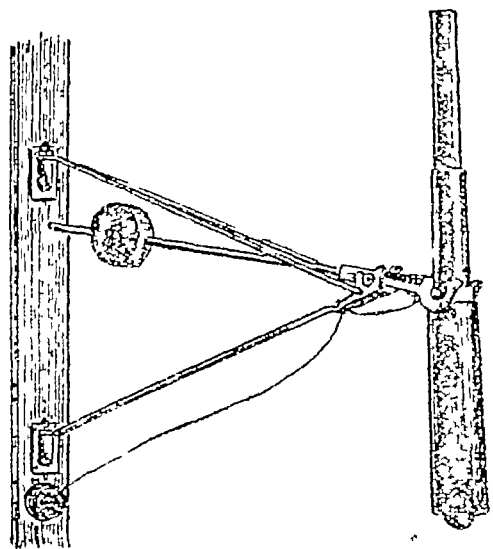
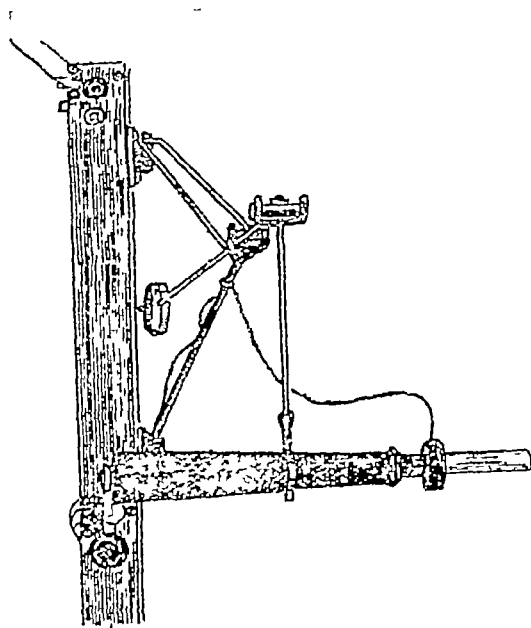
AMSTERDAM, 30th October 1902 —I visited the eye-klinik of the Binnen Gasthuis, a General hospital connected with the local University, which is under the municipality and not under the state. Professor Straub has 40 beds under his charge, these are superintended by a special assistant, whilst he divides the work of his poly-klinik (5,000 new out patients yearly) between three other assistants

He sees his in-patients in a room which is at once a consulting-chamber and a laboratory, and he proposes to perpetuate this arrangement in the new eye hospital about to be built here. Any necessary chemical or microscopical examination can thus be made on the spot

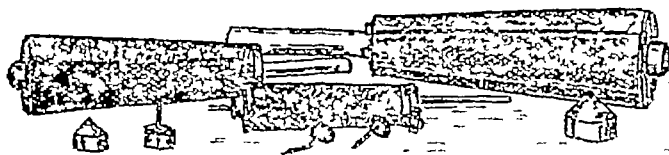
Straub has worked for years at color-blindness, and he finds that, with accurate tests, 5 per cent of the men of Holland can be shown to be more or less color-blind, he does not believe that the women enjoy the amount of immunity from this defect that is generally supposed. Of the many tests for color blindness (and he has tried them all) he finds Nagel's the best, he hopes to produce a greatly improved form of this worker's instrument shortly. He lays special stress on the absolute necessity for working with small color-fields, if one desires to get accurate results

The poly-klinik is admirably fitted with apparatus, and Straub, after using Hugo Wolff's electrical ophthalmoscope for some time, finds that it gives him larger and better-lit fields than the ordinary ophthalmoscope, it is also easier to use, once one has learnt it, since one has no trouble

in catching the light, this is of special value in bed-ridden cases, it is, however, necessary to approach very close to the patient's face with it



VOLKMANN'S MAGNET SHOWN IN TWO POSITIONS.



SHOWN DETACHED, WITH A NUMBER OF ADJUSTABLE END PIECES

For retinoscopy he uses a plane mirror, and a box containing the following spheres — +2, +4, +6 + 8, -2, -4, -7, -10, - and -15

With this outfit it is easy to make any eye 1 to 3 D myopic, the exact degree of myopia may then be determined by seeking the point where the shadow is on the point of reversing,

the point in fact where there is no shadow movement, this is done by starting one metre from the patient and gradually approaching the eye, up to a distance of $\frac{1}{4}$ th metre, when there is no shadow in one meridian, the distance is measured by means of a tape previously fastened to the patient's head by an elastic loop 100 divided by the distance so measured gives us the measure in dioptries of the myopia present, a simple addition or subtraction of the glass before the eye gives one the true refraction of the meridian.

Straub uses *Placido's disc* in its old and simplest form for the detection of irregular astigmatism, and for that of *high* degrees of regular astigmatism, he insists strongly that, while the simple disc gives valuable and rapid indications, and is therefore of great use in the outpatient room, the elaborate models which have sprung from it sacrifice simplicity without attaining accuracy.

Cataract—Straub has lately performed a series of 100 consecutive cases of the simple operation, and he is now near the end of a similar unselected series of combined operations. He finds the aftercourse of the latter series of cases more straightforward than that of the former, the combined cases also call for fewer subsequent discussions than the simple. He bandages only one eye and uses the following method—

- (1) A piece of lint spread with a sterilised mixture of 3 parts of Ung. Zinci, and 2 parts of oil, is applied over the lids, and covered by
- (2) A liberal pad of gauze, fastened on by
- (3) Four strips of Unna's plaster, three of which pass obliquely from the forehead on to the cheek of the same side, whilst the fourth, placed nearly horizontal, passes from just above the eyebrow on to the temple.

Straub also uses this bandage for detachment of the retina, and is satisfied that combined with rest in bed, it has given him excellent results in the treatment of this trying condition. The bandage can be left on an eye for three days at a time and can be renewed indefinitely. He claims that the zinc acts most beneficially in corneal ulcers, and that in *all* classes of cases it *lessens conjunctival secretion*. If this is so, the many possibilities opened out are obvious.

AMSTERDAM, October 28th—I visited the Government Eye Hospital (2 Spinozastraat), it was built in 1874, and has 43 beds, there are over 14,000 new out-patients yearly, and the staff consists of six surgeons, Dr. Juda being the Director. There are also a few beds for paying patients, who are divided into three classes, the daily rates are 7, 5, and 3 guilderns respectively, and include every thing except the surgeon's fees (A gulder = 20 pence).

Instruments are boiled before operation, with the exception of the knife, which is soaked for

20 minutes in a sterilised soap-spirit solution and is then washed clean with sterilised wool and water.

Juda operates on a table, standing in front for the left eye.

Cataract—He has 50 to 60 extractions annually, and almost invariably uses the combined method, reserving the simple one for favourable cases in the young. Even then he meets with a percentage of prolapse amongst the latter class, and finds the complication a very dangerous one, his incision is in the limbus, and he uses a cystitome for the capsule, both eyes are bandaged for two days, and then a Fuchs' shield is placed over the operated eye alone.

Sideroscopy—After a full trial of both Hirschberg's and Azim's sideroscopes, he prefers the former, which he finds delicate in its indications, and easy to handle.

Trachoma—There is much early trachoma here, but the cases come under treatment so soon that the sequelæ are almost unknown, and an operation for entropion is a rare event. Juda uses Knapp's roller-forceps, but seems to prefer expression with his thumbs to any other method, he has tried and rejected electrolysis. Arg. Nit., Protargol etc. are also used.

Glaucoma—Juda does not recognise any case as glaucomatous, unless the tension is perceptibly raised, if there is congestion he performs iridectomy, otherwise he prefers sclerotomy, provided the case is early and the V. A. still = 2 to 3 or more, if the vision has fallen lower than this, he does iridectomy in any case.

Dacryocystitis—He slits the canaliculus and uses sounds in preference to any other measures, and he admits that a case takes three to six months under treatment. He reserves extirpation of the sac (1) for cases in which other treatment fails while the secretion remains or becomes purulent, and (2) for those in which a purulent dacryocystitis complicates a cataract which he desires to remove, he *thinks that the eye runs small risks so long as the contents of the sac are not purulent*, and he therefore does not extirpate under such circumstances. He admits that many patients abscond during treatment, but in view of the opinion above expressed, he does not take this very seriously.

The hospital is old and very defective in its arrangements, but the instruments of diagnosis (including McHardy's new Perimeter) are of the best, and the standard of work appears very high. The operating room is well arranged and good.

THE HAGUE, November 1st, 1902—I visited the Ophthalmic Hospital (114 Laan v. Meerdvoort), and met Dr. Bouvin, there are 15 beds, which last year held 187 in-patients, the new out-patient attendance for the same period was 4,090, and there were 138 major eye operations.

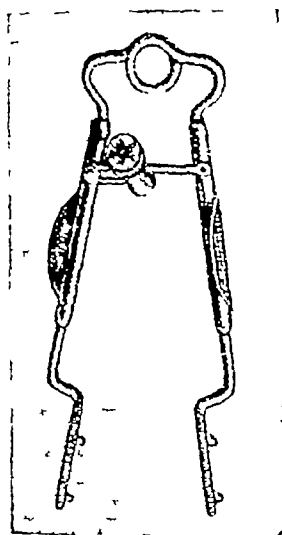
Cataract—Bouvin always makes a small iridectomy, as he considers that it adds greatly to the safety of the operation, his incision is in the limbus; he closes one eye only, using firm

pressure for seven days, by means of a Schreiber's shield, this is made of celluloid with rounded upturned edges for the comfort of the patient, it is perforated, and it is kept in place by strips of plaster.

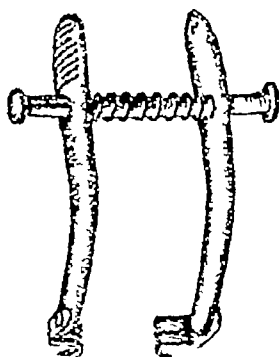
Bouvin is making an excellent series of stereoscopic photographs of morbid eyes by Elsöling's method (*vide* Vienna notes).

He finds adrenalin (1 in 1,000) solution very valuable in chronic conjunctivitis. He is the second surgeon I have met who holds this opinion.

Dacryocystitis—He advocates the extirpation of the sac in labouring men, who suffer from this complaint, in order to avoid *Ulcus Serpens*, etc., he prefers Axenfeld's operation, and accordingly employs both Axenfeld's and Müller's specula, placing the former horizontally, and the latter vertically.



Axenfeld's Speculum, $\frac{1}{2}$ nat size
(Price 13s 6d)



Müller's Speculum
(Price, 6s 6d)

FOR EXTIRPATION OF LACRYMAL SAC

A B—These instruments can be obtained from Herr H. Windler,
N 24 Friedrichstrasse 133 A Berlin

In Parenchymatous Keratitis he has obtained splendid results from the injection of normal saline solution every third day under the conjunctiva.

Bouvin uses vibrating massage (by the Moscow method) "for recurrent Epitheliitis and for corneal opacities following keratitis" (keratitis), and finds the results most gratifying.

He is a thoughtful and interesting ophthalmologist, and speaks English well.

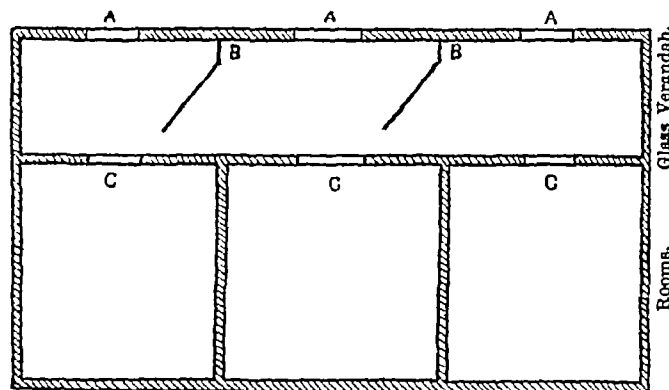
UTRECHT, October 29th—I visited the Netherlands Ophthalmic Hospital, and was shown round by its famous Director, Dr. H. Snellen, the author of the world known test-types. He is 68, and has given over the University Professorship to his eldest son, but is still full of 'go,' energy and new ideas. He sees every new out-patient of the hospital and enters the 'anatomical' and the 'clinical' diagnosis of each case on the admission sheet with his own hand. His welcome to professional brethren is most cordial and hospitable, and his mastery of many languages puts him in

touch with all. He hides a strong original personality under a kindly, tactful geniality. Another of his sons is on the staff of the Amsterdam Government Eye Hospital.

The hospital, a handsome up-to-date building, erected to the memory of Dondeis, and built seven years ago, is well worth seeing. Three features are especially striking, viz—

- (1) The Isolation Block,
- (2) The Operating Theatre, and
- (3) The special children's room in the polyklinik.

(1) The *Isolation Block* consists of a number of wards in a line under one roof, each being complete in itself. A glass verandah which runs along the front of the building has (A) an outside entrance door for each room, and (B) a glass door between each two rooms. Each room has in addition its own front door (C). *Vide* diagram—



It will be seen that the rooms can be used as a block or as separate rooms according as the doors (B) are shut or open.

(2) The *Operating Theatre* has its floors, walls and ceiling painted dull black. There is one very large window looking north and capable of being closed in sections by black draw-blinds. During operation that part only of the window is used, which is opposite the patient's head. The rest is kept darkened. Diffuse light and its accompanying corneal reflections are thus avoided, whilst a good light illumines the eye. Further, the arrangement is said to be very comfortable both to the surgeon and to the patient.

(3) In the polyklinik is a special room for children fitted with an examining table and shut off from the main room by a double door, which effectually drowns cries, etc.

There are 6,000 new out-patients annually, and the staff consists of two surgeons and four assistants.

In the polyklinik, Snellen shows his original test-types rather roughly painted long ago with his own hand.

To illustrate his notes and to teach students he keeps skeleton-stamps of either eye. If he wishes to draw in any region accurately, he introduces a piece of paper under the stamp at that part, and then fills in the details in pencil or ink.

He now rarely finds it necessary to use a mydiatic for the estimation of refraction

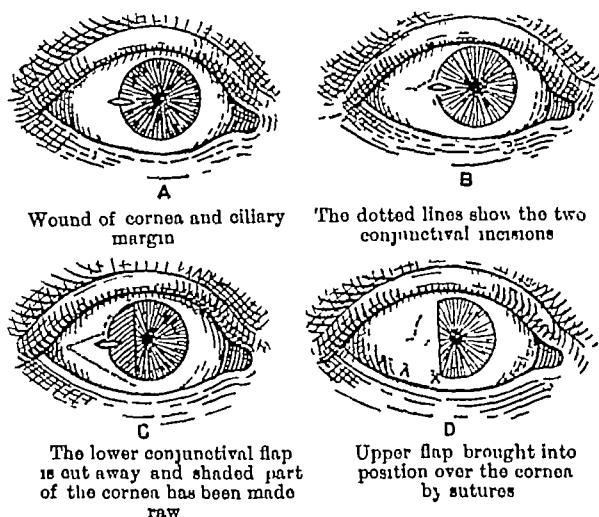
In latent hyperopia he seats the patient for some time to look at a wall while increasing spheres are gradually added

In ordering glasses he makes a point of himself giving the various measurements of the spectacle frame in detail

In cases of *Ophth Neonatorum* Snellen takes in both mother and child for treatment

By curing the maternal passages he diminishes the risk at subsequent labours The child's eyes are frequently irrigated with weak antiseptic lotions Aig Nit in varying strengths is also applied

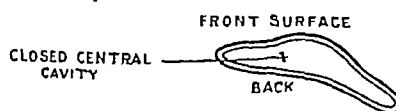
Snellen covers wounds of the ciliary region and corneal border by a conjunctival flap, kept in place by sutures and made to adhere to the cornea by first scraping the desired portion of that membrane with a knife to denude it of its epithelium The four following diagrams show the steps of his operation —



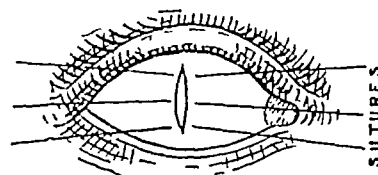
Snellen considers enucleation safer than any operation which has been proposed as a substitute for it, he has lately had a new form of artificial eye made by Muller Sohne of Wiesbaden, which can be obtained from that firm under the name "reform eyes" On section one of these hollow eyes would have the shape shown in diagram 1, it has no sharp edges and no cavity for the collection of secretion, farther, it is very comfortable, and gives a slightly increased range of movement, it, however, requires a larger fornix below than the old-muster eye does Snellen meets this difficulty by drawing the conjunctival wound together after enucleation by means of three transversely placed sutures (*vide* diagram 2)

Snellen believes that cases of simple glaucoma (whose only symptoms are retraction of the visual field, diminished V A, and cupping of the disc) would be found to show an increase of tension, if examined at all hours, and especially if tested in the middle of the night He considers iridectomy the safest operation for

glaucoma, and advocates its performance even in the simple cases

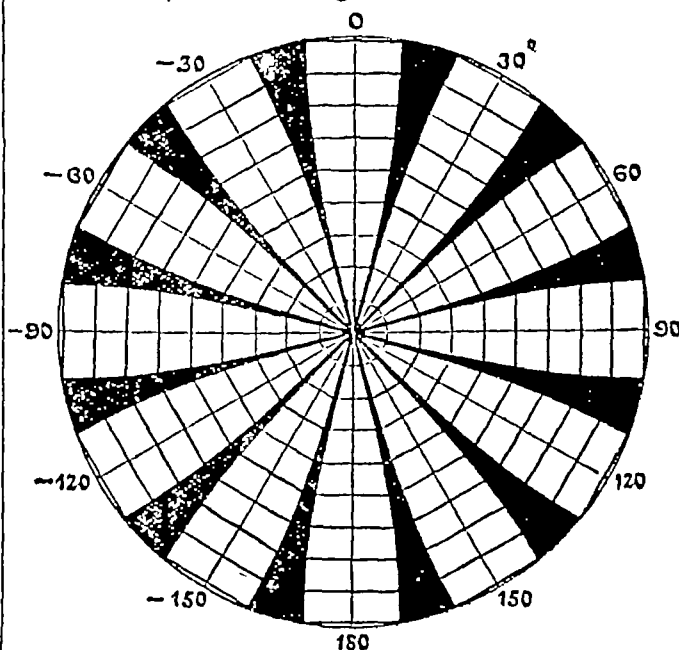


Diag 1
A reform eye



Diag 2

Special arrangements are made for the feeding of in-patient Jews, who come in large numbers The accompanying perimeter chart is in use in the hospital If the black spaces are cut out, and the white spaces brought in contact with each other, a hollow hemisphere is obtained, such as the perimeter arc gives



Snellen's Perimeter Chart

Cataract — Professor Snellen, junior, prefers the simple operation, except for immature, hypermature or complicated cases If he intends to do an iridectomy, he does it as a preliminary operation, and not in the same séance as the extraction, he considers the combined operation more difficult than the simple one He makes his incision outside the limbus in the sclera, only one eye is closed, and a sharp edged metal shield is applied over the dressings, he considers that the sharp edges prevent the patient from interfering with the shield, as it would run into the flesh if he did so, after operation a 4 per cent solution of pilocarpine is instilled, the cataract ward is on the same floor as the theatre, he would not venture on simple extraction if he could not immobilise his patient after operation

THE
Indian Medical Gazette.
DECEMBER, 1903

POST-NASAL ADENOIDS AND THEIR
TREATMENT IN AUSTRALIA

It is now thirty-five years since Wilhelm Meyer published his first paper on Adenoid Vegetations in the Naso-Pharynx. If still alive, his reflections should be of an enviable nature, considering the coldness and even active opposition offered to his observations in the first instance. It took a dozen years for the operation to be generally practised. Then the pendulum of fashion swung high in the opposite direction, for there is a fashion in operations just as in the case of new drugs, diets and "cures." Did not the operation for fistula in ano become fashionable after the case of Louis XIV, and have we not illustrious examples of more recent date? Between 1890 and 1900 there was a regular "boom" in adenoids, with the result that much was done without judgment or discrimination. Since then, however, there has been a reaction to safer practice and a more careful selection of cases. In addition to the satisfaction of a complete vindication and recognition of his work amongst the members of his own profession Meyer has the gratification of having conferred a benefit on many thousands of sufferers scattered all over the globe.

A recent number of the *Intercolonial Medical Journal of Australasia* contains interesting articles on the treatment of post-nasal growths by surgeons in Adelaide, Brisbane, Melbourne and Sydney, whose operative experience extends over thousands of cases. As regards the operation, Dr T K Hamilton prefers the use of nitrous oxide alone, or combined with oxygen or air, to the exclusion of all other anæsthetics. He finds forty seconds give sufficient time for a double tonsillotomy, and for clearing out the naso-pharynx and breaking down synechiæ. The patient is first put in the "inverted" position for about quarter of a hour in order to cleanse the naso-pharyngeal tract with normal alkaline solution. Then he is placed on the table with his head thrown back, and a Burton's hinged gag is introduced. When anæsthesia is complete, a tongue depressor is inserted, and the tonsils are cut with Mathieu's guillotine, which has no barb on the fixing fork. Next

one sweep with a sharp Gottstein-Beckmann's curette shaves off the growths, and lastly, the index-finger is passed round to break down any synechiæ that may exist. The patient is then promptly turned over in the prone position, and kept thus till the bleeding stops. The after-treatment is of the simplest, being practically nil.

Dr A J Brady formerly used Haultmann's ring knife for cases under general anæsthesia, and cutting forceps guided by a mirror under local anæsthesia. Nowadays he has abandoned these methods and uses the Beckmann-Gottstein curette in all cases. He has a preference for chloroform in the majority of cases, but uses a mixture of nitrous oxide and oxygen for hospital practice to economise time when a series of operations has to be performed in succession.

Dr Lockhart Gibson employs chloroform because he finds it admits of greater thoroughness in the operation. For adults and most children over fourteen years he uses local anæsthesia. He operates with the head in the supported hanging-head position, the vertical line of the face being at right angles to the body. His methods vary with the age of the patients: (1) Infants from a few weeks old to about two years—no anæsthesia, unaimed finger. (2) Children under fourteen years—*complete* chloroform anæsthesia, rectangular head position. Special steel nail, *made especially for the finger which is to use it*, admitting sense of touch during the whole operation. (3) Children above fourteen years and adults—cocaine anæsthesia, at times combined with adrenalin, sitting posture, tied forward palate, Lowenberg's and Hovell's forceps, guided entirely by sense of sight.

Dr J W Barnett has nitrous oxide gas administered through a tube attached to a Clover's inhaler from a cylinder with a regulator attached. This gives him fully thirty seconds for the operation. Where more time is required gas is supplemented by ether, or in rare cases by the A C E mixture. He considers chloroform undesirable in this operation. The naso-pharynx is examined beforehand in case of any aberrant artery, none in some form is given for a few days, and calcium chloride for twenty four hours prior to operation. A side gag is introduced before the administration of gas begins, and the mouth is prised open as the inhaler is removed. The patient lies on his back on a flat couch. Three sweeps are made with St Clair Thompson's curette, one in the middle line and one on either side. Then the patient is turned on his side,

and the cavity is examined with the finger Dr Barrett never excises tonsils at the time of the operation, because he has found that in the majority of children the enlargement of the tonsils disappears after removal of the adenoids. After operation he keeps the patient in bed for twenty-four hours, allowing but little liquid or food.

All these writers are agreed that recurrence is rare, and is the result of an imperfect or unskilful operation, in fact that is rather a case of re-growth than of real recurrence. There is also unanimity as regards the evil effects on hearing which result from neglected adenoids. "The melancholy procession of adolescents, incurably deaf as a consequence of neglected middle ear catarrh, due to post-nasal growths, is now becoming very attenuated. The change in my own (Dr Barrett) daily practice in this respect is most striking. Children, speaking generally, are not allowed to become deaf in consequence of ear catarrh, which is almost invariably due to post-nasal adenoids. In fact, so marked has the change become, that when such a tragic case does present itself in practice, it arrests attention by reason of its rarity. Equally marked is the change that has occurred with respect to suppurations of the middle ear, with their mastoid, and other septic complications."

The common experience is also that impaired hearing coming on in middle life is frequently due to post-nasal adhesions or bands, and that these are often present from puberty upwards though seldom seen in the very young. Extended observation has also proved that adenoids may be found at any period from infancy to middle life or even later, and that they are not confined to childhood and adolescence. In addition to ear complications, it is found that adenoids have frequently associated with them headache, of an ocular or of a general character, muscular and accommodative asthenopia, and even trachoma. It is observed also that adenoids are associated with the dyscrasie of lymphatism, inherited syphilis and tuberculosis.

INFANTILE PARALYSIS

It is commonly known that Sir Walter Scott had a slight limp in his gait, but it is not so generally known that this was the result of poliomyelitis when he was about eighteen months old. However, this is by the way and

does not form the subject of this communication. That infantile paralysis is due to a primary lesion of the cord was first established by Cornil and Charcot, it was who pointed out that the cells in the anterior cornua are chiefly affected. Evidence has been accumulating of recent years to the effect that the initial lesion is a vascular disturbance connected with the distribution of the central branches of the anterior spinal artery, and that this vascular disturbance is caused by some toxic agent. In support of this, we have the records of a good many epidemics of poliomyelitis noted by various reliable observers, in Europe the disease is most frequent amongst children in the first three years of their existence, and its most common time of onset is during the warm months, from June to September, when diarrhoea of microbial origin is prevalent.

Anyone with an experience of children's diseases in India is aware of the frequent occurrence of this disease amongst infants and young children of European parentage. Drs Tubby and Jones have made a special study of infantile paralysis in England, and they have been struck with the remarkable frequency of cases amongst children born in India or in the tropics, who had spent their first three years in these warm climates, i.e., during the period when this disease usually occurs, and in climates where bowel-complaints are commonest and most fatal amongst European children. This is suggestive of a microbial origin, or of a toxin absorbed through the alimentary canal. Indeed several observers are at work searching for a specific germ, which some of them believe they have succeeded in finding.

ANCHYLOSTOMIASIS IN THE UNITED STATES

AN American zoologist has recently written a most instructive *Report on the Prevalence and Geographic Distribution of Hookworm Disease*, which is not merely confined to the classification, nomenclature and natural history of the parasite. It embraces also a synopsis of the literature, ancient and modern, of the geographical distribution, of the clinical symptoms, pathology and treatment of anchylostomiasis, and a discussion of the social and economic evils produced by it, more particularly amongst the poorer white population of the Southern States. Dr Wardell Stiles, PH D not M D, is the discoverer

of the new world hookworm, called by him the *Uncinaria Americana*, which he has found to infest the small intestines of people living on rural sandy soils (as opposed to clay, rock, or cities), and to be the chief cause of anæmia in the Southern Atlantic States. So far its existence has been proved in Virginia, North and South Carolina, Georgia, Florida, Alabama, Texas, Porto Rico, Cuba and Brazil. The mature worm is described in detail, and measurements of the male, female and ova are given, but its life-history has not yet been fully worked out. The embryo develops in the ova amongst feces exposed to the air in the course of twenty-four hours, the first ecdysis occurs two or three days after hatching, and the second ecdysis between the seventh and ninth days, after which it is ready to infect man. It takes the parasite from four to six weeks to reach maturity after entering the system. The infection occurs through the mouth by the hands, food or drinking water, and possibly through the skin or sores on the extremities. Cold retards the development of ova and embryos, continued frost kills both, while heat hastens their development. Perhaps this is why patients feel better and have fewer symptoms in winter than in summer. The parasite affects groups of cases, such as families, especially people who come much in contact with moist earth, such as farmers, miners and brickmakers, and it is commoner in a severe form amongst women and children than in males over 25 years of age. It is essentially a "poor man's" disease, thriving amongst those who are habitually uncleanly in their habits, and careless about the disposal of excreta. It attacks the poorer classes of the white population more than the negro, though the negro is by no means exempt. In Egypt a similar comparative immunity of the negro has been observed.

The cases observed by the author he has grouped into three classes as slight, medium and severe, and he has observed three stages of the disease. In the first, the symptoms are purely local, being limited to pains and disordered digestion, which may occur either in acute or chronic forms. The second stage is that of anæmia or chlorosis, and it also presents acute or chronic types. In the acute there is pallor of the conjunctivæ, lips and nails, with a rapid pulse but no cardiac murmur, in the chronic cases the anæmia is not so marked, the pulse is not so frequent, but cardiac hypertrophy

and dilatation are marked. The third is the dropsical stage. In acute cases the anæmia is great, there is cedema of the tissues, and the pulse is very rapid and small, though there are no blowing cardiac murmurs. The chronic cases show symptoms of cardiac defects, loss of compensation, fatty degeneration, cyanosis, dropsy and disordered nutrition.

The duration of the disease must depend largely on whether the patient continues to reside in an infected area, where re-infection may occur again and again. In the case of persons who have been removed to healthy districts, it appears that the parasite can persist in the patient for at least six years.

When the disease has been acquired in childhood there is a general lack of development, a stunted growth, immaturity of the breasts and genital organs, mental lassitude, inability to study, headache, dizziness, timidity, sleepiness and stupidity. The skin is pale, waxy, parchment like, wounds or ulcers heal very slowly. The face has an anxious, stupid expression and a bloated appearance, the eyes are dull, dry and chalky white, and they assume a characteristic appearance when the patient is directed to look intently into the observer's eyes. "After a moment, the length of time *apparently* varying slightly according to the degree of the disease, the pupils dilate, and the patient's eyes assume a dull, blank, almost stupid, fish-like or cadaveric stare, very similar to that noticed in cases of extreme alcoholic intoxication."

The appetite may be ravenous at first, but later it becomes capricious and diminished. Perverted appetite is quite characteristic, many greedily devour pickles, others suck lemons or salt, some chew coffee or resin, or drink large quantities of black coffee or buttermilk. Others, again, eat sand, shells, clay, mud, gravel, charcoal, chalk, dried mortar, rotten wood, cloth, paper, &c. This "dirt-eating" only occurs in severe cases. A gnawing pain in the epigastrium is a common early symptom, followed later by intermittent colicky pains, indigestion, and a foul tongue. In bad cases, especially in summer, the abdomen shows marked evidence of tympanites and ascites, so much so that the terms "pot-belly" or "buttermilk belly" are in common use for this condition. There may be either diarrhoea or constipation, and the state of the feces is variable, but in medium and severe cases they are often reddish in colour, and blood is present in some cases. When a microscope

is not at hand a convenient test consists in placing an ounce of *fresh* fæces on a piece of white blotting paper. After standing for from twenty minutes to an hour, there is a reddish-brown stain resembling that of blood. Progressive emaciation and profound physical weakness are not uncommon. The circulatory system shows symptoms after those of the digestive tract have developed, and they become both the most common and the most marked. In addition to the marked anæmia of the mucous membranes, pulsation of the cervical vessels is obvious as well as the præcordial impulse, and the cardiac phenomena already described are developed. The blood becomes very watery, there is a very low hæmoglobin average, and marked eosinophilia is observed in some cases.

For the prevention of anchylostomiasis there are three different lines along which we must proceed—(1) The destruction of the adult worms in the intestine must be attempted by the use of drugs. There is nothing new as to treatment, thymol or male fern being the only drugs in vogue. In America the usual method seems to be the administration of half a drachm of thymol at 8 A.M., another half drachm at 10 A.M., followed by castor oil or magnesia at noon. This may be repeated at intervals of a week. Iron and other tonics are given between the weekly doses of thymol. There seems to be a good deal of difference of opinion and practice as to whether alcohol should be given along with thymol or not, but the balance of evidence both by experiment and clinical experience is against this combination, owing to the increased risk of the more rapid and complete absorption of thymol in solution. When *filix mas* is used one or two drachms are given, followed three or four hours later by a calomel and saline purge, castor oil being avoided.

(2) The destruction of ova and embryos in the fæces must be effected by a proper disposal of excreta by drying, burning, disinfection or burial.

(3) Disinfection of infected areas is best effected by heat desiccation, either by spraying the ground, grass and shrubs with burning oil, or by spreading straw on the ground and then setting fire to it. This use of burning straw is now common in parts of Bihar for plague-disinfection purposes, it being simple, cheap and handy.

The author's remarks on the boiling or filtering of drinking water form a shrewd com-

mentary on the "tin-kettle" gospel of a would-be reformer who came out to India some years ago and rated us roundly without any knowledge or experience of local conditions. "To tell the average fair hand or miner that he should always 'boil or filter' the water before drinking, it is, academically, a step toward preventing infection with uncinariasis. Practically, however, it is a step toward throwing away whatever influence we may happen to have with him. Theoretically, we should teach this simple hygienic precaution to all families, both in the city and in the country. Practically, we are in many cases weakening our position by insisting too generally upon this point. * * * It is much more important to urge him to locate his privy some distance from the well. That is a proposition he can appreciate, the necessity of boiling or filtering drinking water is usually beyond his mental horizon." If this is true of the white man in America, with how much greater force does it apply to the Indian raiyat.

The author favours the adoption of the term *Uncinariasis* in preference to the *Anchylostomiasis* of Looss, but we fear that neither the strictly zoological grounds nor the argument of priority will have much weight with medical men. He points out that medical writers spell the word *Anchylostoma* in at least nine different ways, and he gives a very complete list of synonyms for this much-christened long-named worm. He also points out that there is good evidence in the Ebers papyrus from Thebes that the symptoms of *Anchylostomiasis* were known to the ancient Egyptians nearly three thousand five hundred years ago, and that the physicians of those days treated the disease according to their lights, but it was not until 1843 that the parasite *Anchylostomum duodenale* was first described by Dubini of Milan.

LONDON LETTER

THE INDIAN MEDICAL SERVICE.

THE Official Memorandum recently issued by the India Office "regarding the position of officers to be appointed to His Majesty's Indian Medical Service" has been received with approval in this country. It refers only to the military side of the service, but it has been authoritatively announced that "the subject of the salaries of officers in civil employ is now under the consideration of the Government of India." It is time it were, for the present status is practically

that which was established in the early sixties and circumstances have undergone very material changes—mostly for the worse as regards the emoluments of civil surgeon—since then. The new order has undoubtedly redressed many grievances and effected a very considerable change for the better in the prospects of Indian Medical Officers. When I entered the service the pay at Netley was 5s a day, and after leaving Netley until arrival in India 10s a day, and the pay on arrival was Rs 286-10. Now the Lieutenant on probation receives 14s. a day, and continues to be paid at the same rate until he reaches India, when he receives Rs 420 a month. The scale of pay has been raised all round, and the two earlier pensions increased. The scale of invalid pension is fairly liberal, but furlough allowances appear to be very low. When an officer has paid for passage to and from India for himself, and perhaps wife and children, he will find himself considerably out of pocket, and the cost of living and travelling in this country will make his furlough allowance look rather foolish. A wandering unsettled life in Europe is necessarily a costly one. Men find it to their advantage to live in towns, when on furlough, and frequent hospitals and societies, or to travel and see something of the world rather than quarter themselves in some remote village, and then profession and position demand the maintenance of a mode of life which, without being extravagant, ought to be respectable. It will therefore be necessary to provide a substantial credit balance in the bank before leaving India. I, at least, have found it so, and I have also found an unsettled furlough life considerably more costly than a settled life after retirement. The provision of special pay for special work is a good thing, but much will depend on the scope and application of the concession. Special work in India seldom if ever allows a man to undertake private practice, and it also shuts him out from other sources of remunerative employment. The regulations regarding furlough for study are a distinct improvement. The rule as regards the extension of service beyond the age of 55 in the case of selected Lieutenant-Colonels (formerly Brigade Surgeons) in order to permit them to qualify for the highest pension is generous. Non-selected Lieutenant-Colonels will not, of course, participate in this boon, the reality and extent of which will depend on the time and principles of selection. It is quite possible that a man entering the service late in life and who has

done excellent work may, from various causes not affecting his character or professional qualifications, be "passed over" and compelled to retire at 55 on £500. The provisions of this memorandum will no doubt undergo very close attention and criticism in India, but, on the whole, there can be no denying that it places the Service on an improved footing, and that a man entering it may confidently look forward to earning a decent competence while actively employed and in addition to providing for all contingencies, which may compel him to drop active life and to ensuring for himself and his family means of sustenance in any event. It is perhaps less easy to save money and still less to "make a fortune" in India than it used to be, but it is a comfortable thing to feel assured that on entering the service a man is able to contemplate his future without anxiety or misgiving, and an able, ambitious man with hope and encouragement. Much, however, will depend on how the conditions of civil employment are dealt with. It is satisfactory to find that professional examinations which constitute so irritating and irksome a feature in the sister service have not been introduced. The examination of Lieutenants in "military law and military medical administration" seems reasonable and necessary in view of the character and conditions of the Service.

CORDITE EATING

THE British soldier has discovered a new intoxicant. In the October number of the *Journal of the Royal Army Medical Corps* appears a most interesting paper by Major J. W. Jennings, DSO, RAMC, in which he details the results of inquiries regarding the consumption of cordite by soldiers. Cordite, the new substitute for gunpowder, is composed of 58 parts of nitro-glycerine, 37 parts of gun-cotton, and 5 parts of mineral jelly. A Lee-Metford cartridge contains sixty "strands" of this material. It has "a sweet, pleasant, pungent taste and is only slightly soluble in the mouth." It causes "throbbing, headache, flushing of the face, visible carotid pulsation, giddiness and disordered action of the heart." Major Jennings sucked a fourth of a strand for two minutes and experienced the most racking splitting headache he ever felt in his life together with hammering and ringing noises in his ears. The headache lasted quite thirty-six hours. There seem to be various ways of

taking cordite. It may be sucked or drunk as a boiled down decoction, or added to beef or tea. Lighting a cigarette or pipe with a strand of it appears to have been a fairly common practice. It imparts a sweet taste to the smoke and causes dryness of the mouth and thirst, followed by somnolence and after headache. Visual illusions also resulted from its use. When partaken of in other ways, like most other nervines, it produces a primary state of excitement followed by mental hebetude and deep sleep lasting several hours. In combination with alcohol it increases the intoxicating power of the latter, and develops quarrelsome and combative propensities. A man seems to get mad-drunk from the combination, and the evil elements of his disposition are quickened and displayed. Gariulity is an early consequence, and the memory seems to be stimulated as well as the faculty of speech. The cordite sleep is very profound, and the sleeper is aroused with difficulty, and when aroused, displays great stupidity, failing to comprehend what is said to him and repeating the same thing over and over. He has been dreaming vivid and terrible dreams, and his temples and occiput ache badly. Small drinks of beer help him to pull himself together. A cordite habitué is said to look aged and ill, and he becomes untidy and sloppy in his habits and appearance. Major Jennings does not indicate to what extent this vice prevails in the Army. The habits seems to be mixed up with addiction to morphia, alcohol, cocaine and other narcotics. The effects are probably too unpleasant to favour its general use. The paper is, however, a curious and interesting contribution to our knowledge regarding intoxicants.

THE LEPROSY DISCUSSION AT SWANSEA

THIS has been reported at some length in the *British Medical Journal*. Mr. Hutchinson's views were put forth with his usual ingenuity and force, but they failed to command the assent of any of the speakers who followed him. He has, however, returned to the combat in the correspondence columns of the *Journal* and criticised the speeches one by one, turning them to his own side of the dispute. He freely and candidly acknowledges that his facts and contentions are of the *à priori* type and of the nature of circumstantial evidence, and rather gives away his argument by his theory of "commensal" communication. What is wanted

is not discussion but research. History and geographical distribution may be read variously according to predisposition, but the only light that will finally and fully illuminate the subject is that which proceeds from exact knowledge of how the leprosy bacillus enters the body and leaves it, and by what agency or agencies or media it is conveyed from the leper to the healthy man. If rotten fish were the only or chief mode of conveyance, one would expect a different sort of geographical distribution from that which obtains and, after all, Manson's query as to how the bacillus finds its way into the fish is a very pertinent one.

15th October, 1903

K McL

Current Topics.

OPIUM IN THE PHILIPPINES

It appears that the Americans, like ourselves have an opium question and people who agitate against the use of the drug. A bill proposing to place the opium trade of the Philippines in the hands of a single concessionaire has caused bitter opposition, and has resulted in a committee being appointed to investigate and report on opium traffic in Japan, Formosa, Hong-Kong and China, Java, the Straits Settlements and Burma. The committee consists of Major E. C. Carter, Surgeon, U. S. Army, a bishop and a Filipino representative.

Apparently Government desired to sell the opium concession to a syndicate, and thus to realize a certain amount of revenue, but the Church and the Chinese have combined to frustrate this, though from very different motives. The Evangelical Alliance disapprove *in toto* of the sale or use of opium in these islands, whereas the Chinese object to any restriction being put on the sale of cheap opium. Should this American Exeter Hall succeed in blocking the bill, the immediate result will be that "the wily celestial, as he smokes more smuggled opium at a less price and under less restriction, can smile to himself at the easy way the white man can be fooled when he looks at a practical subject through the glasses of sentiment," as the *Boston Medical and Surgical Journal* puts it.

COMPULSORY VACCINATION IN FRANCE

THE results of systematic vaccination and re-vaccination in Germany have become so manifest that France also has followed suit at last with a compulsory law that came into force during the current year. This ordains that primary vaccination be performed during the first year of life, and re-vaccination between the eleventh and twenty-first year. Parents and guardians

are held responsible, and vaccination must be done solely with bovine lymph, either direct from the calf or with glycerinated pulp

IMPURITY OF VACCINE VIRUS

THE Director of the Hygienic Laboratory at Washington, Assistant-Surgeon M J Rosenau, has made a prolonged series of observations on *The Bacteriological Impurities of Vaccine Virus*. He discovered that a good deal of carelessness in the preparation of glycerinated lymph was the result of an erroneous belief in the bactericidal properties of glycerine. The use of bovine virus, which is now practically universal in Europe and the United States, was practised and advocated by Negri of Naples in 1842. The admixture of pulps with sterile glycerine was urged by Dr Moncton Copeman in 1891, who claimed that the growth and multiplication of the bacteria usually found in bovine virus were arrested, and that they were in time gradually destroyed. Glycerine is supposed to kill bacteria slowly by dehydration, but germs with thick capsules resist it indefinitely. Glycerine cannot affect the germs of tetanus or anthrax.

The writer examined the vaccine sold by the manufacturers for over a year. There was an average of 4,354 bacteria per point in 190 dry points, some of which contained 15,000, and one as many as 44,000 organisms. In 244 tubes of glycerinated pulp 1,742 bacteria per tube were found, some contained 10,000, and one 30,000, bacteria, which consisted of pus cocci and various bacteria. This was due to the glycerinated pulp being used too soon before the bacteria had gradually died out in the glycerine. Tetanus spores live long in vaccine virus. In examining vaccine virus for tetanus, it is best to make cultures first, and later to test the effect of the culture in animals.

ETIOLOGY OF BUBONIC PLAGUE

Dr Ashburton Thompson, the Chief Medical Officer of the Government of New South Wales, has an article in *The Lancet* of the 17th October, in which he puts forward opinions differing widely from those commonly accepted as to the diffusion of plague. His experience in Sydney has led him to believe that the spread of plague is due neither to direct nor indirect contact with the sick nor to place infection, but that the sole source of infection for man is through infected rats, he is also in favour of the flea hypothesis.

Dr Thompson does not isolate his plague patients beyond putting them in a separate ward of a hospital for infectious diseases, neither does he segregate "contacts unless they have been in contact with plague rats. Even disinfection of clothing is 'rapidly done'." But special care is taken to clear rats out of houses, and to render them less liable to be infested by these vermin.

He claims that his procedure saves time, anxiety, perturbation of the public mind, and expense.

Apropos of Australia and plague the Australian Government have deputed Dr Anderson to investigate plague in India, which he has been studying recently at Indore and at Mhow.

FEMORAL THROMBOSIS IN CHRONIC DYSENTERY

PHLEBITIS and thrombosis are of common clinical experience in the puerperal state, in gout, typhoid fever, lobar pneumonia and cholera, but thrombus in a large vein is an unusual accompaniment or sequela of dysentery. In the *University of Pennsylvania Medical Bulletin* for September, Dr T S Githens records a case of chronic dysentery in a European male, 40 years of age, which was associated with phlebitis and thrombosis in the femoral, popliteal and saphenous veins of the left lower extremity. Examination of the blood showed no marked diminution in the red blood corpuscles or hæmoglobin. Cambay has recorded one case in his *Dysentery in Warm Countries*, and Laveran cites four cases in an article on the subject.

THE LATE MR CADGE OF NORWICH

The friends and admirers of this surgeon proposed to erect a memorial in recognition of all that he did for Norwich Hospital. By his skill he made it celebrated for lithotomy, enriched its museum with specimens, and its funds by gifts amounting to nearly £25,000.

THE EFFECTS OF HEAT ON AUSTRIAN TROOPS

During the Austrian manoeuvres in the past summer a march of sixteen miles had to be performed in the Herzegovina. In one regiment alone 400 men fell out suffering from heat-exhaustion, 50 of whom were carried unconscious to hospital, and there were 15 fatal cases of heat-stroke.

BIBLIOGRAPHY OF CHOLERA. A LIST OF WORKS ON CHOLERA, BY I M S OFFICERS

BY LIEUT COL D G CRAWFORD I M S

CHOLERA existed in India long before the nineteenth century, indeed, descriptions of what is evidently that disease may be found in older writers, but, prior to the historic epidemic of 1817, no author appears to have produced any work entirely devoted to the subject. The accompanying list, a sufficiently long one, shows how much attention the disease attracted in India during the rest of the century. MacPherson's "Annals of Cholera" deals entirely with the history of the disease prior to 1817. It, and MacNamara's "History of Cholera," will probably be found to be the two most interesting works on the subject.

An asterisk prefixed to the title of a work signifies that it is a pamphlet or short article.

The dates after the authors' names are those of their entering the Service

1 BENGAL

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- (1) "The history of cholera in India from 1862 to 1881, being a descriptive and statistical account of the disease, as derived from the published official reports of the several provincial Governments during that period and mainly in illustration of the relations between cholera activity and climatic conditions, together with original observations on the causes and nature of cholera, with maps and diagrams," 900 pages, folio, Lahore, 1882, folio, Calcutta, 1884 8vo Grubner and Co, London, 1895
- (2) "A short practical treatise on the nature, causes and treatment of cholera, as a supplement to the history of cholera in India from 1862 to 1881" London, demy 8vo, 1887

Bomford, G (30th September 1874)

- * "Observations on Bacteria in Cholera" Article in "Scientific Memoirs," part III, 1887

Bryden, J L (4th August, 1856)

- (1) "A report on the Cholera of 1866 to 1868" Calcutta, 1869
- (2) "A report on the general aspects of epidemic cholera in 1869, a sequel to the report on the cholera of 1866-68" Calcutta, 1870
- (3) "Cholera epidemics of recent years viewed in relation to former epidemics (a record of Cholera in the Bengal Presidency from 1817 to 1872)" 1874

Clark, S (24th November 1849)

- * "On the use of dry warm air in the treatment of cholera"

Corbyn, F (7th May, 1814)

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- (2) "Cholera, what can the State do to prevent it?" 8vo Sampson, Low, Marston and Co, London, 1884

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- * (a) "A report of microscopical and physiological researches into the nature of the agent or agents producing cholera," 1872
- * (b) "The same, second series," 1884
- * (c) "Cholera in relation to certain physical phenomena," 1878

(2) Articles in "Scientific Memoirs"

- * (a) Part I, 1884—"On the relation of cholera to schizomycete organisms"
- * (b) Part II, 1888—"On the effects sometimes following injection of choleraic comma bacilli into subcutaneous tissues in guinea pigs"
- * (c) Part IV, 1889—"Are choleraic comma bacilli, even granting that they are the proximate cause of choleraic symptoms, really efficient in determining the epidemic diffusion of cholera?"
- * (d) Part V, 1890—"On milk as a medium for choleraic comma bacilli"
- * (e) Part VI, 1891—"On some species of choleraic comma bacilli occurring in Calcutta"
- * (f) Part VIII, 1894—"The results of continued study of various forms of comma bacilli occurring in Calcutta"
- * (g) Part X, 1897—"Choleraic and other commas on the influence of certain conditions in determining morphological variations in vibronic organisms"

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MANAGEMENT OF EPIDEMIC PLAGUE

(By J ASHBURTON THOMPSON, M D, D P H, President of the Board of Health, New South Wales)

In all accounts of epidemic plague which have hitherto been published, the following causes have been recognised as efficient — Communication of the infection from the sick by direct, and by indirect, channels (fomites), and place-infection*, by which latter is meant extra-corporeal persistence of the infection in houses, etc., to which it has been communicated by the sick who have sojourned in them. By the two former the infection would be diffused, by the latter maintained. They would amply suffice, of course, to explain the epidemicity of plague, any share which may be borne therein by the rat has consequently been left in a position of undefined importance. When the Medical Officer of the Local Government Board wrote† that the world-record of epidemic plague on which he was commenting failed completely "in affording sufficient data for determining the degree to which man was in danger from the rat," he accurately summed up the then, and even the present, state of opinion. Destruction of rats is now universally recommended, it is true, but as a counsel of prudence, not as a demonstrated necessity, still less (if it could be carried to extermination) as the sole essential. All that has been ascertained on this head is that man and the rat are susceptible of an identical infection. That plague is primarily a disease of the rat, that it is commonly communicated to man from the rat, or that man and the rat in circumstances of usual propinquity are reciprocally infective, are but conjectures, for it has been also said that sometimes an epidemic has preceded the epizootic, and even, in different places, that each has run its course unattended by the other. Nor are current views free from

* Indian Plague Commission, July, 1901, see also A Manual of Plague, by Major W E Jennings, I M S, 1903

† Reports and Papers on Bubonic Plague, July, 1902 (I regret to be obliged to point out here that the account of plague in New South Wales which is given in the volume referred to, and of which I am in the best position to speak authoritatively, is erroneous in almost every detail of importance)

inconsistency, for, while human intercourse is insisted upon as the most important means by which the infection is introduced into distant places, it is also taught at the same time and by the same writers that the disease is rarely communicated from the sick to the well when the former remain at home, or enter hospitals in the neighbourhood of the place at which they have been attacked. This contradictory teaching was noticed* in India five or six years ago, and is still heard there. Briefly, the epidemiology of plague has been left obscure by the observations thus far recorded in other countries, and, indeed, in confusion.

It has gradually become an article of popular belief in this State that plague is diffused solely by the rat. This is owing in part, no doubt, to persistent inculcation of that view by the Board of Health from December, 1899, onwards, but inacquaintance with the difficulties which beset the simple theory which is implied in the one word "rat" has probably contributed largely to establish it. These difficulties consist primarily in absence of direct evidence that plague-rats are causatively associated with plague in man. If the fact were so, coincidences between plague-rats and cases of plague should be commonly, and it seems *a priori*, easily, observed—coincidences in time, in district prevalences, and on individual premises, lastly, rat-plague should have been noted invariably to precede plague in man. But, in fact, elsewhere very little more than a general liability of man and the rat to suffer at or about the same time has hitherto been recorded. Further, if such coincidences had been noted often enough to warrant inference of causative connection between the two, another and serious difficulty would still present itself, namely, how communication of the infection from rat to man could be brought about so commonly as to account for epidemics. For in the rat-plague is a septicæmic disease, and some special means of conveyance are certainly necessary.

Consciousness of these difficulties on the one hand, and on the other belief in the efficiency of the first-mentioned causes, resultant from observation in circumstances which made accurate observation very difficult, have contributed to the confused views on the epidemiology of plague at present generally entertained. And consequently management of epidemic plague commonly consists in strict isolation of the sick, segregation during the incubation period of those who have been in contact with them, and in practice of the same rigorous kind of disinfection as is proper in the case of small-pox or of scarlet fever.

But all are aware that here, in Sydney, plague has lately been successfully managed in a simpler way. On occurrence of the first case of the epidemic of 1900 (January 19th) the

Board of Health recommended* that the sick should be removed to the Infectious Diseases Division of the Coast Hospital, there to be lodged as were cases of chicken-pox or of measles in adjacent wards in the same enclosure. It announced on March 2nd, 1900 (case 5), that it was unnecessary to segregate contacts, and that for the future it would as a rule remove the sick only from dwellings, while on March 23rd, 1900 (case 31), it so far expressed its opinion regarding the probability of diffusion of the infection by merchandise, as to permit removal of goods in the ordinary course of trade from premises within the area which on that date was the first to undergo systematic cleansing†. These several advices were declined, however, by the head of the Government of that day. Consequently the sick were isolated at the Maritime Quarantine Station at North Head, contacts were segregated at the same unsuitable place, and cleansing-areas were as strictly "quarantined" by temporary fences and cordons of police as physical circumstances permitted. The results were 303 cases, a fatality of 32·4%, and an expenditure of £176,000. In 1902 the Board was left free to manage the second outbreak as it thought best, and, consequently, then did as it had wished to do in 1900. The results were 139 cases, a fatality of 25·75%, and an expenditure of £24,000‡. But as regards cost on this second occasion, the Local Authority for the city of Sydney took its proper share of the cleansing work, under the very able advice of the Medical Officer of Health for the Metropolitan District (Dr W G Armstrong, M.B., D.P.H.), and spent on this an additional sum of £8,000. Expenditure during the second epidemic must therefore be reckoned at £32,000. It will be perceived, however, that even that amount, when multiplied by the factor which turns 139 into 303, yields a product which is well below £70,000. For this latter sum at most, therefore, the epidemic of 1900 might have been managed but for the direction by which the Board was then overruled, and probably the cost might have been even smaller, for the method of management which was accompanied in 1902 by a much reduced fatality, would presumably have been also attended with a smaller number of cases had it been applied in 1900.

The advice just mentioned as having been given before the epidemic of 1900 had set in, or quite at its commencement, had been deduced from reports of epidemic plague which had been issued at that date by other countries, it was not, and still is not, in accordance with the

* Report of the Board of Health on the case of A P. February 7th, 1900, by the present writer, W A Gullick, Government Printer, Sydney, 1900.

† Report on an outbreak of plague at Sydney, 1900, by the present writer, Government Printer, Sydney, 1900.

‡ Report of the Board of Health on a second outbreak of plague at Sydney, 1902, by the present writer, Government Printer, Sydney, 1903.

opinions of such reporters, or of others who have since furnished further accounts. Nevertheless, at conclusion of that epidemic it was possible to show beyond dispute that it was sound. It appeared clearly that human intercourse had not in any degree operated to diffuse the infection, and (as far as judgment could be formed on results of a first visitation) that place-infection had not operated to maintain it. These observations constituted a step of which the importance has been almost entirely overlooked, one writer alone,¹ so far as I am aware, having recognised it. They were due, it need hardly be added, to no differences between the disease as seen here and as it appears, for instance, in India, or in China, for there were none. Nor can they be ascribed, either to the effects of management (such as are implied in prompt removal of the sick and prompt disinfection of their dwellings), or to differences in housing, feeding, climate and the like, for although these factors may account in some degree for the smallness of each of our epidemics as compared with those which have happened in some other parts of the world, yet the number of cases which did occur was absolutely considerable. No, they flowed solely from utilisation of the better opportunity for accurate observation which a civilised community, a European type of government, and an efficient sanitary organisation afforded.

With that expression of opinion these notes may be closed, for here my object is merely to draw attention to the Sydney method of managing epidemic plague, and to the success with which it has been attended. While all the members of the Public Health Staff over which I have the honour to preside are now satisfied that with us the sole source of infection for man consists in rats infected with plague, and that the hypothesis of the flea—for so it must still be called—best explains and co-ordinates all the phenomena which our epidemics have presented, the recorded evidence on which these opinions rest is too lengthy for inclusion in any such paper as this, nor, at this stage, will it bear condensation. Those who are specially interested in the subject can now study it in the reports on the first and second epidemics which have been published. I conclude, therefore, by remarking that there are several points which still await research, some of which are Plague in the rat, with especial reference to possible occurrence of a chronic form, repetition of the successful experiments reported by Simond,² Raymond and Gauthier,³ and Elkington⁴ on transmission of this infection from animal to animal by fleas, but by the method adopted by the last-mentioned writer when working in the Plague Research Labora-

tory at Bombay under Haffkine, and precise observations on the time during which the flea continues capable of communicating the infection which it has acquired from the rat. Ability of some of the species of fleas which infest rats to feed upon man has been sufficiently established by Tidswell¹ (who first discovered *P. Pallidus* to be the species most commonly infesting rats on the Australian coastline—an observation which was found to hold good of rats in Bombay after he had communicated it to correspondents in that city) as well as by others—(*Australasian Medical Gazette*, October 1903).

THE EMPLOYMENT OF STEAM IN SURGERY AND IN GYNÆCOLOGY

THE above is the title of an article by Kozlenko in the Russian medical journal *Wiatsh* (No 3, 1903), a translation of which is given in the September number of *La Médecine Scientifique*. A lengthy review of a work by Dr Ludwig Pincus recently published under the title of "Atmocurris and Zertocurris, the Use of High Pressure Steam in Gynecology," (Weisbaden J F Bergman, Glasgow, F Bauermeister, 1903) is also to be found in the August number of the *British Gynecological Journal*.

The article of Kozlenko gives a complete history of the introduction of the treatment, by vapourisation, whilst the review in the *British Gynecological Journal* amounts to a full description of Pincus' methods, and details his views as to the classes of cases the treatment is suitable for.

Up to the present vapourisation has apparently failed to excite any very great attention, and certainly, at least until recently, any enthusiasm in the profession in Great Britain, the references to it in the journals or at medical meetings have been few. There is a paper in the May number of the *Journal of Obstetrics and Gynecology of the British Empire* by Dr G F Blacker of University College Hospital, "On Vapourisation of the Uterus." It appears, however, that he did not follow the technique recommended more recently by Pincus or use the perfected apparatus now used by him. It is to be gathered from his paper that he was not greatly enamoured of this form of treatment, as in conclusion he says "This mode of treatment is undoubtedly of value in certain cases, but while it may supplement the use of the curette, it can never replace the latter instrument." The other references in Great Britain to this treatment appear to be confined to a paper and a demonstration on the subject by Professor A V Macan, read before the Obstetric Section of the Academy of Medicine of Ireland in April 1900, to a paper on the same subject read before the Obstetrical Society of Edinburgh in May 1900 by Professor Simpson. A reference was also made to this treatment by Dr John Campbell of Belfast at the meeting of the British Medical Association at Cheltenham in 1901, but only to condemn it. A reference is made to it in MacNaughton Jones' *Diseases of Women* (8th Edition, 1900) and Pincus' apparatus is figured (pp 387, 397). MacNaughton Jones, however, condemns its use as dangerous. It does not therefore appear that in the British Isles it has been ever reasonably tried, at least up to quite recent dates. The history of its introduction into use on the Continent appears to be as follows—

Fifteen years ago steam was used for the first time in Russia by Professor V Snequiroff of Moscow in a case

¹ W Kollo, *Zeit f Hygiene*, 1901, p 397

² *Annales de l'Institut Pasteur*, 1898

³ *Comptes Rendus de la Société de Biologie*, lv, p 1497, Decem-ber, 1902, *Revue d'Hygiène*, xxv, p 426, May, 1903

⁴ *Australasian Medical Gazette*, xxii, p 348, August, 1903

¹ Report, Sydney, 1902, p 71, "Ecto parasites of the Rat," by Frank Tidswell, M B, D P H, Microbiologist to the Board of Health.

of metrorrhagia. He came to the conclusion that it was a useful hæmostatic and deodorant. He appears to have used steam at 100° C only, making use of a fenestrated canula. In 1894 Snequiroff made many experiments on animals in order to show it was possible, by making use of steam, to remove portions of the liver, the spleen, the lungs and the kidneys arresting by its means all hæmorrhage. He also showed that it answered equally in arresting hæmorrhage in incisions of bones, muscles and skin. Following up those experiments, in the same year, in the Hospital Alexin, he successfully performed a series of operations making use of steam as an hæmostatic and sterilizing agent. In this series were included five resections of the knee, removal of the breast for cancer and external malignant and lipomatous tumours, etc., without making use of artery forceps or ligatures. He also made use of it to deodorize open abscesses and for the cure of fistulous sinuses, particularly in tuberculous subjects.

In the next year or two the treatment was extended into Germany, particularly in gynecological practice, and it appears that at this date the principle of using superheated steam was gradually introduced. Pincus of Dantzig, was apparently the first German surgeon to make use of this treatment, and he, it appears, claims that he has worked out the technique on his own lines.

In 1897 Snequiroff made a communication to the 12th International Congress of Medicine, basing his views on the results of 500 cases in which various forms of endometritis had been treated by this means. He stated that when superheated steam is applied for the space of one minute to the uterine lining membrane, it could destroy completely the mucous membrane. The after results of the application were that for a few days an abundant rather watery fluid flowed from the uterus in cases of non-hæmorrhagic endometritis, this gradually lessened and disappeared entirely at the end of a few weeks. He claimed that this treatment gave rise to no ulterior trouble with regard to menstruation, and did not in any way interfere with subsequent pregnancy.

In 1897 also its use in post puerperal endometritis was advocated by Pincus, who published the particulars of ten cases he had treated. In all the cases the cure was rapid and complete, in some of the cases the temperature subsided at once. He concluded that the treatment was specific for local puerperal infections. Dührsen at the 27th Congress of German Surgeons at Berlin, in 1898, showed an uterus which had been removed after being subjected to the action of steam. The whole interior of the uterus was covered by a uniform pellicle except at the cervix which had been protected by the non-conducting tube. He said he considered it to be a valuable treatment in metrorrhagia due to fibroids and in that form which occurs at the menopause. He considered it would in some cases replace hysterectomy.

Its use, however, appears to have been quite in the experimental stage and confined to a few clinics up till 1899, when Dr Ludwig Pincus read a paper at the seventeenth meeting of the Association of German Naturalists and Physicians, held at Munich in September, 1899, and in the same year published his work in German, "Ueber Atmocauris und Zertocauris in Gynæcology." The paper gives the results of a collective investigation as to the value of the treatment based on 838 cases, and, as 749 were returned as either cured or greatly improved, the immediate result was that the method was recognized over a large portion of the Continent and in America as a wonderful addition to the means at our disposal for the treatment of uterine hæmorrhage, and it is now described and recommended in text books in these countries. Thus, in the appendix to the second English edition of Dührsen's "Manual of Gynecological Practice," a description of Snequiroff's method is given, and it is stated that vapourisation is likely to render some graver operation unnecessary and to become a valuable aid in minor gynecology.

In the review to the *British Gynecological Journal* a full description of the apparatus used, and the preparation necessary for the operation are given as used and recommended by Pincus. Briefly, the apparatus is as follows—A small boiler with safety valves regulated so that they are capable of resisting pressure of 2½ atmospheres, and with a thermometer attached so that the temperature may be readily read. The steam is conducted from the boiler through an india rubber tube to an uterine catheter much like an ordinary Boze man's catheter. The catheter has a non-conducting cover fitted over the portion which lies in the cervix and a tube is fitted to the return opening to carry off the waste steam. There are arrangements of stopcocks, etc., to regulate the supply of steam and to readily turn it off. For atmocauris the catheter is provided with holes which permit the steam to pass into the uterine cavity and to circulate. For zertocauris (contact burning), a later introduction of Pincus, the canula is of metal throughout and serves as a local cautery, though it is said to be of a milder type than the actual cautery. It is advisable, especially if the operator is not expert, to use a short wooden speculum to prevent the vagina being scalded. It is also wise to practise the use of the stopcocks beforehand, to insure that the operator's hands are not suddenly burnt by catching hold of non-insulated parts of the apparatus. Pincus advises that anaesthetics should not be used, he says it is unnecessary as the operation is painless and indeed is disadvantageous, as the occurrence of pain acts as a danger signal, indicating that the action is extending beyond the mucous membrane. The temperature of the steam used varies from 100° Cent to 115° or over 120° for atmocauris, for zertocauris 115° Cent is always used. The temperature made use of, and the length of time during which the uterus is exposed to vapourisation, will vary with the indications for treatment, usually in mild cases of endometritis 15 to 20 seconds will be sufficient, whilst in severer cases of septic endometritis, and for hæmorrhage, it will be necessary to expose the mucous membrane as long as for 30 seconds, it should never reach to one minute.

Pincus gives very elaborate lists of conditions for which this treatment is applicable and lays down the rule that, as a preliminary, the presence of malignant disease of the body of the uterus must be excluded, as well as inflammatory conditions in the uterine adnexa or in the parametrium. Briefly the causes for which he would use this treatment may be classed as follows. For atmocauris—

Absolute indications—Uterine hæmorrhages, all cases which fail to be influenced by drug treatment, including particularly bleeding in cases of myomata, inoperable cancer of the body of the uterus, preclimacteric hæmorrhage. To produce sterility in women with incurable diseases.

Relative indications—Subinvolution, all inflammatory affections of the uterus for which the curette is now generally used.

Zertocauris is indicated when certain circumscribed areas, such as the cornua, require to be cauterized. It is also of use in obstinate endocervicitis and erosion.

Kozlenko, in the article on the "Wrathe," brings the history of the further development of this treatment down to quite recent times, he also gives a full description of the appearances found in an examination of a series of uteri removed at periods of 1, 3, 6 and 9 days after vapourisation (presumably the uteri of animals). The results are given in detail, but, in brief, generally the effect was to cause destruction of the mucous membrane in an uniform manner over the whole surface and for an equal depth. It was also found that the steam did not directly pass into the uterine glands, these being destroyed only to the same depths as the destruction of the mucous membrane had reached.

In gynecological practice the latest development of the treatment is to obtain obliteration of the uterine cavity in cases of metrorrhagia at the menopause or in cases of severe senile endometritis. These are cases which are very rebellious to treatment and in which curettage is frequently unsuccessful. Many of them would even warrant the performance of hysterectomy with only the ordinary means of treatment otherwise at our disposal, but in many of these cases such a severe operation is often contraindicated by the state of the heart, kidneys or blood vessels. In these classes of cases especially, it appears, vapourisation is likely to be a distinct addition to our powers of treatment.

As regards the recent uses of superheated steam in other branches of surgery, mostly in Russia, Kozlenko gives the following instances which are sufficiently striking to reproduce here. Dolganoff has used it in gonorrhoeal dacryocystitis, Golovine in empyema of the frontal sinuses, in all cases with satisfactory results. Stepler has used it successfully for the cure of hæmorrhoids. Professor Berthold of Königsberg, has used it in severe epistaxis and in chronic rhinitis, he plugs the posterior nares with a tampon and causes the superheated steam to circulate in the nasal fossæ, passing the steam through a hole in a mask applied to the face. Snequiroff in 1900 excised one-half of an enlarged (angiomatic) spleen. He made incisions with a knife and directed a current of steam on to the incised surface. The hæmorrhage was perfectly arrested, but some of the neighbouring tissues were injured, the patient, however, recovered satisfactorily.

Snequiroff, to avoid this undenied complication, then invented a special instrument for this class of work. It is of the nature of a saw, the steam passes down through the handle and escapes through small apertures between the teeth, being thus directed to the actual parts incised. This instrument has been experimented with in the laboratory, and it was found on resecting large pieces of the liver that only some of the larger arteries continued to bleed, and these could readily be ligatured or hæmostasis could be obtained, if preferred, by directing a current of steam from a canula directly on to the artery. Following up these experiments on animals (dogs), Snequiroff has by this means divided a kidney, in the human subject, in a case of pyelitis, without losing a drop of blood.

As to the genuineness of the claims of the use of superheated steam made so strongly by these Continental surgeons, it has already been said that British gynecologists as yet appear to look upon it with suspicion, general surgeons, it would seem, have not even given it a consideration. One case certainly of death is reported as being caused by this treatment, in this case steam at a temperature of 105° Cent was applied for one minute and necrosis of the uterus resulted. It must be said, however that all new forms of treatment have had their preventable casualties in the earlier stages of their development, and this should not deter us from giving the treatment a trial if any distinct advantages can reasonably be claimed for it. The advantages claimed for it in gynecological work, especially as compared with the ordinary operation of curetting, are the possibility of performing the operation without giving chloroform, that is, its painlessness, the rapidity and completeness of the operation and the rapid convalescence. In addition, especially in the cases of bleeding from myomatous uteri and in climacteric metrorrhagia, it is claimed that the hæmostatic effect is much more satisfactory, and will indeed occasionally obviate the necessity of removing the uterus.

It is probable that Teutonic hospital out patients are less sensitive to pain and generally less timid than English women, and will more readily submit to manipulations of this kind without flinching, it is very doubtful whether any considerable number of our ordinary patients would have sufficient courage to see their uterus being connected with a boiler, and to see a puff of steam coming out of the return pipe without being

frightened. There would be much danger of their suddenly drawing themselves away, the sudden movement leading to serious scalding of the vagina and external genitalia. If this claim can be substantiated, there is no doubt that it will be of great advantage to have a means of treatment for the large number of cases of endometritis of such a mild character that the severity of the symptoms hardly warrant us in exposing the patient to the slight risk that an anæsthetic entails, and which we now attempt to cure by repeated intra uterine applications. Experience only can decide whether its claims to be a more efficient hæmostatic than curetting in serious metrorrhagia is a real one.

A. H. N.

EXTRACTS FROM MEDICAL JOURNALS SPECIAL SENSES

THE January 1903, quarterly number of the *Annals of Ophthalmology* is good as usual. Of original papers there are — A report on congenital anomalies of the eyes, a long and interesting paper by Lewis of Iowa on 'The Conservation of Binocular Single Vision,' maintaining that the only congenital attribute of vision is light perception and that all other visual attributes have to be learned by the child, and differentiating cases of loss or lack of binocular vision into those which can and those which cannot be improved by treatment, the results of an examination of 4,608 railroad employes for acuity of vision, hearing and colour perception, and a paper by Suker of Chicago on 'Paraffin—its use in the formation of a stump after an enucleation.' Suker uses it in place of a glass globe in Mules' evisceration or Frost-Loup enucleation, and injects the paraffin either at the end of the operation into the cup or capsule cavity as soon as all bleeding is stopped by packing with gauze, or preferably a week after the evisceration or enucleation. For this length of time the cavity is packed with gauze and the sclera or conjunctiva is sutured over it, leaving a small hole at one end of the wound through which the gauze can be withdrawn and the paraffin injected. Suker recommends it particularly for restoring a sunken socket after a remote enucleation. The reaction is severe, and if too much has been injected there may be sloughing, or the paraffin may escape. Three parts pure paraffin were used, mixed with two parts pure vaseline giving a melting point of 102°F, — rather too low for India.

Of the abstracts given in the *Annals*, the following may be drawn attention to. — Bourgeois, of Rheims, has **couched** two cataracts, doing a preliminary iridectomy, and passing the needle through the sclera. In one case glaucoma followed with atrophy of the globe. The patient is kept upright after the operation. Capauner, of Melhouse has treated twelve cases of **scintillating scotoma** by ocular massage with very satisfactory results. He thinks his success makes the retinal origin of the trouble probable (Galerzowski), and not cortical vasomotor spasm as held by Charcot. Few migrainous patients could endure massage, we fancy, during the attack. Liebreich, of Paris, is convinced that the development of **myopia** is usually the result of an increase in the interpupillary distance due, primarily, to a too great separation of the inner orbital walls. He therefore regards prism as the only positive remedies against the progress of the condition, and only adds concave glasses after 'the prodromal stage.' Gattier, of Nîmes, says abstinence from tobacco even for a long period will not always cure **nicotine amblyopia**. In his own case pilocarpine then completely relieved the patient of a reduction of vision to one-sixth of normal with a colour scotoma. Ruffel, of Stuttgart, after an extensive experience of **protayol**, reports that it is very useful in dacryocystitis in 10 to 20 p.c. solutions followed by massage of the canaliculi. He found such

* See *Indian Medical Gazette*, February 1903, p. 75

a solution equal in its action on the gonococcus to a 2 p c solution of nitrate of silver, while its effect is more lasting and less irritating. Schoen, of Leipzig, has published some very radical views on the etiology and treatment of **glaucoma**, believing that treatment of this disease by iridectomy or sympathectomy is based on a wrong conception of the conditions obtaining. He describes anatomical changes in the ora serrata with degeneration of the ciliary muscle, which latter he considers to be the missing link explaining glaucoma simplex. Glaucoma can, he maintains, be prevented, but not cured. Prevention consists in accurate correction of refractive errors, 80 p c of glaucomatous eyes are either hypermetropic or astigmatic, 13 p c afflicted with insufficiency of the internal recti, and the remainder presbyopic. This Schoen showed in 1894, and prolonged observation of many cases ever since has proved to his satisfaction that "every eye can be guarded against glaucoma if it can be seen early enough by an ophthalmologist who is accustomed to observe the preliminary symptoms. When fully developed it is absolutely impossible to cure the disease by any known means or any method yet invented." Pyle, of Philadelphia, publishes a paper on **The disappearance of opacities of the crystalline lens** in which he discusses the now numerous well authenticated cases of spontaneous absorption of such opacities. While characterising the so called 'non operative' treatment of cataract as practised by advertising charlatans, and irregular physicians as worthless and often distinctly dangerous, he says 'too much stress cannot be laid on the value of personal hygiene, treatment of associated local and general disorders, careful and repeated refraction (sic), and the proper use of the eyes in arresting the progress of incipient cataract.' These statements are at variance with one another. No evidence is adduced that 'proper use of the eyes,' &c, can arrest incipient cataract.

The general desire to improve **ocular prosthesis** has led Velez of Mexico to implant fat from the gluteal region after enucleation or exsiccation with success.

Photography of the fundus has made rapid progress of late, and apparatus are described by Thorner of Berlin and Dimmer of Gratz. It seems probable that before long one or other of these will come into general use and the application thereof to general medicine is pointed out by Thorner. Changes of growth, the action of drugs, variations of temperature, electric currents cutting or stimulation of nerves can be studied in the living animal on photographs of the fundus taken at short intervals by exact measurements of the vessels.

Numerous experiments on the use of **sublimine** (ethylenediamene sulphate of mercury) as a disinfectant are reported by Schuftan and Blumberg. It is less toxic than sublimate, and has greater power of tissue penetration. It is very efficient in sterilizing the hands and does not cause eczema. It does not coagulate albumin. Biniodide solution possesses the same advantages except that it does irritate the skin.

Lezenius, of St Petersburg, has used subconjunctival injections of **hetol**, 1 or 5 p c solutions in water or saline solution, for cases of herpes corneæ with good effect, also in cases of interstitial keratitis. The presence of central scotoma in **beri beri**, well established now, was shown by Inouze to be due to retro bulbar neuritis as it resembles in all respects that found in alcohol and nicotine neuritis. Komoto looks upon beri beri as an intoxication disease. Nicolai has described a new eye muscle which he calls the **musculus papillæ optici**, and which he claims forms part of the lamina cribrosa. It is responsible for the swelling with 'Stanungs' symptoms, which is spoken of as 'choked disc' sometimes observed after long continued accommodation. It is composed of smooth muscle fibre, and illustrations are given in the original paper showing its presence in man and various animals. Von Graefe described a case of **unilateral quinine amblyopia**, and now Westhoff has described a second case

in which the evidence seems fairly conclusive, no explanation of how such a limitation to one eye is possible is forthcoming.

F P M

SURGERY

Acute Pancreatitis—Hogarth and Moynihan (*Practitioner*), describe a case of acute pancreatitis. The patient, æt 75, was of active habits, but stout and short—a hearty eater, accustomed for the last 20 years to attacks of vomiting at intervals without pain. For the last two years he had had persistent dyspepsia. On 2nd November 1902, a hearty midday meal was followed by distension not relieved by vomiting. Pain developed in the epigastrium and quickly became agonizing, with retching and attempts to belch. The pulse was full, 80, and the temperature subnormal, no collapse. The bowels were always regular and had been opened that morning. The urine was normal. Next day the retching continued, only a little mucus and water coming up, temperature subnormal. The abdomen was full, not distended, quite resonant all over, with no rigidity of the abdominal muscles, liver dullness normal. There was some tenderness high up in the sub-costal angle, and intense pain in the epigastrium was present. The diagnosis veered between biliary colic and perforation. Nutrient enemata and salt solution were given by the rectum. The temperature remained sub normal. The pulse 100 per minute, the retching continued at intervals. The tongue was dry and coated with yellow fur, but neither sweating nor rigor occurred. An exploratory incision was proposed but declined. On November 4th things improved, but although the abdomen was more distended and tympanitic, the patient insisted on going downstairs. The bowels were freely open. This was followed by a bad night, and the next day he continually vomited a dark sour fluid which was without any feculent odour. It was brought up without any trouble—apparently typical peritonitic vomiting. There was much distension but still no rigidity, and very little tenderness which could only be detected in the sub costal angle. The tongue was dry and thickly coated the pulse 120 the temperature subnormal. There were large bluish black blotches on the abdomen, thighs and legs, but the features had no abdominal aspect. On November 6th the pulse was 124, the temperature subnormal, the bowels moving twice of their own accord—bulky and black perhaps due to bismuth, the abdomen less distended and tympanitic. During the day, November 7th to 12th, the symptoms all gradually abated, the blotches disappeared, the bowels acted freely. There was practically nothing abnormal in the abdomen. On November 14th the pulse rate had begun to rise, and the temperature was 100° F for the first time.

On November 17th a rounded lump projecting downwards into the right hypochondrium could be indistinctly felt deep in the abdomen.

On November 18th to 20th he lost ground, pulse steadily rising, there was no pain nor any great tenderness or tympanites.

On November 21st a large rounded swelling stretched across the abdomen just above the umbilicus from one nipple line to the other. There was complete resonance over the mass and the rest of the abdomen, liver dullness was normal. A peculiar motion was now passed quite suddenly, extremely foul smelling, and said to contain little yellow seeds swimming in the black fluid. It was followed by normal motions. Nothing abnormal per rectum digitally. The swelling was not reduced in size. Abscess of the lesser sac of the omentum following a gastric ulcer was diagnosed. As a result of a further examination of the swelling the tumour was diagnosed as a distended gall bladder with local peritonitis. The pancreas was not considered.

On opening the abdomen after dealing with many adhesions, the tumour was recognised as pushing forward the stomach, and with the finger passed backwards

above the stomach, the lesser omentum was felt to be bulging forward. A small hole was made into the lesser omentum from whence pus gushed out. The orifice was isolated with packing, and two pints of blood stained fluid evacuated. The pancreas was found to be necrotic, and much was removed. Two large drainage tubes were passed through the lesser omentum into the lesser sac and were packed in. The patient died from shock twelve hours after operation.

A limited examination showed that the surface of the gut was normal, but that the transverse colon ran through the hard, tough, and greatly thickened omentum. The right hypochondrium was normal. No pus, no matting. The gall bladder was a little enlarged and contained a stone. The foramen of Winslow was quite closed. The hand passed through the lesser omentum into a cavity below the greater curvature of the stomach.

Kocher's ideal operation for hernia—Steven son (*Dublin Journal of Medical Science*, June 1903) tabulates some cases of radical cure of hernia and describes the procedure of this operation which he says is not to be found in English text books. The fibres of the external oblique and the external ring are clearly exposed by a skin incision over the inguinal canal. The coverings of the cord are divided longitudinally, and the sac is isolated as far as the internal ring. A small opening is made in the side of the sac, and the finger is passed into the general peritoneal cavity to insure that the sac is empty. The apex of the sac is grasped by the point of Kocher's hernia forceps. The apex is invaginated into the body of the sac and then made to pass along the inguinal canal through the neck of the sac into the general peritoneal cavity. The skin is retracted upwards. The point of the forceps is made to project against the anterior abdominal muscles above and external to the internal ring. The point is then exposed by a small incision through the muscles. The sac is drawn through this opening at the same time that the hernia forceps are released and withdrawn. The sac by this procedure is inverted and has its peritoneal surface outermost, its position and direction being completely altered with the neck projecting against the anterior abdominal wall. The sac is transfixed, ligatured, and amputated close to the abdominal muscles. The forefinger is now passed along the canal in front of the cord, and seven or eight Lembert's sutures are passed, the first being through the muscles above the sac. The second and third sutures are passed so to go through the neck of the sac besides the two edges of the muscles. The remainder are passed through the anterior wall of the inguinal canal, the last approximating the pillars of the external ring. With the aid of a director when tying these sutures a puckered groove is formed, which projects backwards into the canal along its whole length.

Kocher estimates that this operation, is possible in about 25 per cent of all his cases.

The advantages of Kocher's operation as compared with Bassini's, are (1) There is less injury to the tissues in that the external oblique muscle is not divided along the inguinal canal as in Bassini's operation, (2) and hence the patient can be allowed about sooner, and (3) should suppuration occur and the deep stitches give way, the parts are in no worse condition than before the operation. But Bassini's operation is preferable (1) in most congenital hernias with the sac intimately connected with the cord, (2) when the inguinal canal has to be explored to find the sac.

Adiposis Dolorosa. Ballet (*Presse Medical* April), and *Medical Review*, May) describes a case in a woman at 68, in whom violent pains in the legs and arms began as a first symptom about eight years previously. The legs were cylindrical columns, the fold of the ham being lost, the prominence of the patella indistinguishable, the calf effaced. At the ankle the fatty integument ended sharply, producing a striking contrast between the limb and foot, between which there was a well

marked groove. While under observation the solid firm oedema developed on the dorsa of the feet although these usually remain unaffected. The thigh just above the knee measured 60 cm. The arms and forearms were much enlarged, the muscular contours being quite lost. At the wrist was a well-marked groove separating the hand from the forearm. There was some obesity of the thorax and abdomen, the skin of the lower part of the latter forming a large roll which hung over the thighs. But in sharp distinction to a case of ordinary obesity the face and neck were quite unaffected, the face was almost emaciated, and the supra claviclar fossae were well marked. The fact that the face, hands and feet escape is one of the salient features of the disease, distinguishing it from ordinary obesity. In *adiposis dolorosa* the fat is not always deposited in the same way, as it may resemble a diffuse lipoma, local or general or in nodular lipoma.

Spontaneous pain often precedes the appearance of the fat, the pain often persisting. Pain may be elicited on pressure in all cases, and may be produced by muscular contraction or movement of any kind. Other symptoms are neurasthenia, lassitude, prostration, mental phenomena, *e.g.* modifications of character, hæmorrhages, vasomotor disturbance, abnormalities of perspiration. The pain is dependent on a periaxial neuritis of the small subcutaneous nerves, the large trunks usually, escaping. The causation of the disease is obscure.

R B

Review.

The Symptoms and Pathology of Plague—

By Captain E F GORDON TUCKER, I.M.S. Bombay Educational Society's Press, 1903

THIS handy and useful *brochure* represents an amplification of plague lectures delivered at the Grant Medical College. Medical officers with little practical experience of the disease will find this a most instructive little book, as the clinical phenomena are so fully and clearly described. There are four chapters dealing with etiology, clinical types, prognosis and diagnosis, whilst the last chapter deals with treatment of plague patients and the management of an epidemic. The second chapter contains a detailed account of the various forms of plague, which the author classifies clinically as bubonic, septicæmic, pneumonic, intestinal, cerebral, and cellulocutaneous plague. Amongst the sequelæ of the disease it is interesting to note that persistent tachycardia and disseminated sclerosis are given. As regards treatment, a stock mixture is recommended consisting of belladonna, digitalis and strychnine, in small doses, prescribed along with a diaphoretic and diuretic mixture.

It is satisfactory to learn that inoculation with Haffkine's prophylactic "is gradually getting fixed in the minds of the inhabitants of the towns in this presidency" (Bombay). The last portion of the book, which describes the management of a plague epidemic, is very good. It gives not only the author's experience, but it also contains luminous extracts from the reports of other medical officers of the Bombay Presidency. The last thirty-three pages might with advantage be published as a separate pamphlet for distribution amongst district and municipal officials.

Travelling Allowance Chart—By E C DOZEY

THIS chart for drawing up travelling allowance bills is constructed by Mr Dozey, the Superintendent of the Accountant-General's Office, Bengal. This should be sufficient voucher for its accuracy. But the chart is so large and unwieldy, and the array of thirty-eight columns in a row is so repelling, except to such as spend their lives over columns and figures, that we think this publication would have had a greater chance of success in book form with pages of the size of the folded chart.

Aids to Physiology—By PEYTON T B BFALE, F.R.C.S. Baillière, Tindall and Cox, London, 1903. 8vo, pp 239. 48 illustrations. Price, 3s 6d.

THIS is one of the students' aids series, founded on the book written a good while ago by Prof. B. Thompson Lowne, and now practically rewritten owing to the advances made in physiology of recent years. It is not intended to take the place of a text-book of lectures or of laboratory work. Its object is to present in small compass the knowledge required from a student going up for examination, in fact to enable him to revise his subject rapidly. The danger of these small books is that many a student substitutes them for the standard works and lectures which he ought to read, and thus makes them "crash-books" without ever getting a proper grasp of his subject. Chapters such as those on Respiration, on Digestion, on the Nervous System and on the Special Senses are well-written *résumés* of the subjects which they treat of. The little book is well got up and handy in form, with clear diagrams and well-selected illustrations.

Studies in the Psychology of Sex—By HAVELLOCK ELLIS. F. A. Davis & Co., Philadelphia, 1903.

The present volume, which is one of a series, deals with three subjects, *viz.*, analysis of the sexual impulse, love and pain, and the sexual impulse in women. In the first essay the author analyses the definitions and significance of the sexual impulse. After due discussion he discards as inadequate both the theory of its being an impulse of evacuation and also of its being merely a reproductive impulse. Then Moll's dual definition of the impulses of detumescence and of contraction are considered, especially in relation to Darwin's sexual selection. Finally the author favours a definition of the sexual impulse as consisting of the impulses of tumescence and detumescence, the latter being a powerful instinct but dependent on the former, and it in turn being closely associated with violent motion such as fighting or vigorous motion such as dancing or athletics. The argument is fortified by a wealth of examples taken from animal life and from the primitive races, the collection of which evinces a wide reading and a philosophic grasp of the subject.

The second essay treats of the relation of love to pain. Mr Havelock Ellis sets himself the

task to answer the questions—why is it that love inflicts, and even seeks to inflict, pain? Why is it that love suffers pain, and even seeks to suffer it? This leads directly to the consideration of the essential phenomena of courtship in the animal world generally, next, passing from the normal to the abnormal, he discusses varieties of algolagnia such as sadism, masochism and flagellation. His conclusions are that pain, especially the mental representation of pain, may act as a powerful sexual stimulant under certain abnormal circumstances, that it does so because pain is the most powerful means of arousing emotion, that anger and fear are the two emotions most intimately associated with fear, and that they are the fundamental animal emotions on the psychic side, through which the process of natural selection largely works.

In the third essay the sexual impulse in women is discussed. The relationship of marriage, celibacy and divorce to suicide in the two sexes shows that in men the frequency of suicide increases progressively throughout life, in women there is a marked diminution after thirty, *i.e.*, when the period of the most intense sexual emotion has been passed, followed by another increase in frequency during the climacteric period from forty to fifty years. Marriage appears, contrary to the common belief, to be less of a protection against suicide amongst women than men, and divorced women are less liable than married ones. As regards insanity also, marriage appears to have a greater prophylactic influence amongst men, there appears to be a relatively greater preponderance of insanity amongst single men over married men than is the case with women. Marriage seems to increase the tendency to crime amongst women as decidedly as it decreases criminality in men. In conclusion, this book cannot be regarded as suitable for general personal *ingimbis puerique*, it is not a drawing-room book.

Material Medica of India and their Therapeutics—By RUSTOMJI NASERWANJIF KHORY and NANABHAI KATRAK. Times of India Press, Bombay, 1903. 2 vols.

THIS is an ambitious work, a mine of facts and a monument of industry. In 1857 Dr Khory published his *Bombay Material Medica and Therapeutics*, in which he attempted to give an account of Indian drugs and their uses as remedial agents. On this edition being exhausted, instead of issuing another edition, he has enlarged the scope of the work in conjunction with his colleague, Dr Katrak, and has produced a comprehensive work on *Material Medica and Therapeutics*, in which Indian drugs and treatment are placed side by side with those of European medicine. In describing any important drug the authors first describe its physical properties and chemical constitution, then its preparations and physiological effects, next the effects of ordinary doses, small and repeated

doses, and poisonous doses, antidotes, any incompatibles, and lastly its therapeutic uses

The first volume contains a definition of terms, a description of the various methods of administering drugs and of their preparation, conditions which modify the action of drugs, poisons and their antidotes, organo-therapy, sero-therapy, and forms in which medicines are used. This is followed by an account of organic drugs of animal origin, of inorganic drugs, and of the organic carbon compounds. This is succeeded by a lengthy description of the therapeutics of various diseases with very full lists of remedies. At the end there is a complete index and a posological table.

The second volume is devoted to organic drugs from the vegetable kingdom, and it is the portion of the work which is more particularly Indian, just as the first volume is chiefly an account of European drugs and therapeutics. The latter portion of the second volume contains a classification of drugs according to their physiological effects, a section on therapeutics, an index and posological table.

Both authors and publishers are to be congratulated on the production of a comprehensive work in an attractive form. It is a book which should have a wide circulation in India amongst both students and practitioners.

An Atlas of Illustrations of Clinical Medicine, Surgery and Pathology—Compiled for the New Sydenham Society (A continuation of the Atlas of Pathology). Fasciculus XVI or V of the New Series. Coxa Vara, plates A to I, Miscellaneous J to L. London: The New Sydenham Society. Agent H. K. Lewis, 136, Gower Street, W.C. Price to non-subscribers, 10s 6d.

Part I of this fasciculus is devoted to a consideration of certain very definite alterations in the shape, structure, size and angulation of the neck of the femur of the adult, the accurate ascertainment of which has been rendered possible of late years by the use of the Röntgen rays in the study of diseases of bones and joints. To these pathological changes the expressive name of "Coxa Vara" has been given to distinguish them from those of the true Morbus Coxæ. The letterpress by the Editor and by C. R. B. Keetley, F.R.C.S., gives an excellent *resumé* of the state of our knowledge regarding the pathology, symptomatology, differential diagnosis, prognosis and treatment of the disease. This is followed up by short clinical notes regarding a few specific cases of the malady. But the principal feature of the paper is a number of full-page illustrations and skiagrams of the pelvis and affected femora taken from patients, these being mostly faithful reproductions from the famous and unrivalled "Jones-Morgan" collection of skiagrams in illustration of the special deformities of the neck of the femur which characterize coxa vara. In every instance the increased horizontal position of the neck of the femur, the relatively increased

upper border of the neck, the bending backwards of the neck in a horizontal as well as perpendicular plane with the convexity forwards, on one femur in some cases, in both femora in others, are well brought out in the minutest anatomical details.

A very important part of the paper is that dealing with the pathology of the disease. It asserts, with a very good show of reason, that the disease is nothing but a local manifestation of *Rhachitis Adolescentium*. The hints regarding the points of differential diagnosis from hip-joint disease and senile changes of the neck of the femur are well worth the perusal of the practitioner and the consultant alike.

Part II gives descriptions of a case of ununited fracture of the surgical neck of the humerus, one of displacement of the bones of the elbow-joint, resulting from inherited syphilis, and of some cases of multiple carcinomata of the skin. In every instance the letterpress is illustrated by excellent skiagrams and photo-etchings.

Altogether, the present fasciculus more than keeps up the reputation of its predecessors.

A Handbook of the Diseases of the Eye and their Treatment—By H. R. SWANZY, A.M., M.D., F.R.C.S. H. K. Lewis, London, 1903, 8th edition, post 8vo, pp. XX and 678. Price, 12/6.

Although not a score of years have passed since the original of this most popular of textbooks in the English language on *Diseases of the Eye* was first published, yet it has now reached its eighth edition. In its praise we have little to add to the eulogies pronounced on it in the columns of the *Indian Medical Gazette* with reference to previous issues, *eg*, on the seventh edition, in the number for November, 1900, and on the sixth edition in June, 1897. The present volume has been revised throughout. We are all familiar with those early chapters on refraction, in which the subject is dealt with so simply and succinctly. The descriptions and illustrations of operations are as good as ever. There is a considerable amount of new matter added to several of the chapters, *eg*, several forms of keratitis and matters connected with the cornea, Pflüger's trichiasis, and a description of lymphangioides of the eyelids. The causal factor of this last affection he attributes to repeated attacks of facial erysipelas blocking the lymph channels. We remember seeing an extreme case of lymphangioides of both lids in both eyes, which showed horizontal scars on the lids. These scars were caused by a procedure common amongst the Egyptian fellahs for the treatment of granular lids. The lids are wedged into split sticks, which are worn for a considerable time, and which set up inflammation, œdema and ulceration, followed in some instances by cicatricial contraction and an improvement, in the trichiasis, but it occasionally results in a

condition of lymphangioides Kuhut's method of extirpation of the lachrymal sac, sympathetic ophthalmitis, the use of the magnet and tumours of the optic nerve are treated in greater detail than formerly Maxwell's operation for shrunken socket and Kronlein's temporary resection of the outer wall of the orbit for tumours have been added. The index, the illustrations, and the get-up of the book are quite in keeping with the excellence of the text.

Lessons on Massage—By MARGARET D. PALMER. BAILLIÈRE, TINDALL & COY, London, 2nd Edition, 1903. Demy 8vo pp XVI & 261, with 118 illustrations. Price, 7/6.

Already this deservedly popular book has reached a second edition. The first edition was reviewed in the columns of the *Indian Medical Gazette* for February, 1902. We agree with the opinion then expressed that the so-called indispensable elements of Anatomy and Physiology are somewhat overdone when we consider the work is written for the masseuse. At the same time we think the author has done well to supply a certain amount of teaching on these subjects, so that the pupil may have a handy book of reference as her training and experience widen her horizon. To illustrate our meaning we may take the large coloured diagram of the back of the trunk with the coloured origins and insertions of the erector spine and complexus muscles, and the diagrams of the brachial, lumbar and sacral plexuses,—surely these are not indispensable for the masseuse. There is a large coloured diagram of the main vessels of the trunk and limbs which is doubtless of practical utility, but we must take exception to the artery marked "g Continuation of Radial Trunk," which can only exist as an aberrant anatomical freak. It is represented as parallel to, and coextensive with, the axillary artery, and seems to be a combination of the posterior circumflex, anastomotica magna, and anterior ulnar recurrent arteries. It is not depicted as having any direct connection whatever with the radial artery. Likewise the muscles of the trunk, figured in diagrams 15 and 16, leave a good deal to be desired as to accuracy and relative proportion, though correct illustrations in both cases cannot fail to help the beginner.

Enough, however, of carping criticism. There are many very clear and useful diagrams and illustrations, which do credit both to designer and publisher, and all the letterpress connected with massage is admirable. The directions and descriptions are clear and concise, and are the fruit of the ripened experience of a practical exponent of the art of massage. Chapters are devoted to the manipulative methods for the extremities, trunk, head and neck. There are instructive chapters on the massage of special regions, spinal curvature, general massage, and the massage of children. The special features of this edition are the chapters on the

Schott treatment and on bandaging. The average medical practitioner neither knows nor practises massage sufficiently, and he or she will find in this book a means of enlightenment as well as the masseuse undergoing training. In India there is a wide field lying almost fallow to trained experts of both sexes.

Correspondence

A POSSIBLE CAUSE OF KALA AZAR

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR—In the *British Medical Journal* of 11th July, 1903, page 79 I described the occurrence of parasites found both *in vivo* and *post mortem* in the spleen of cases suffering from irregular pyrexia with enlargement of the spleen and liver. These parasites have now been identified by Iveran and Mesnil as belonging to the genus *Piroplasma*, species new.

The symptoms of my cases, 17 up to date (10th November, 1903), tally very closely to those of Kala azar, hence I am led to believe the cause may be identical. The symptoms of my cases are, enlarged spleen and liver, irregular pyrexia with apyrexial gaps, paroxysmal cedema of the feet, congestion of the lungs on occasional subcutaneous hemorrhages and cancrum oris. Prognosis is unfavourable. Quinine however administered is ineffectual. Not having seen a case of typical Kala azar, may I, through your columns, request medical officers in and out of India to send me slides of smears of spleen juice or blood obtained by puncture *intra vitam* from this organ fixed by absolute alcohol and ether. I shall be able by return post to acquaint them of the result of my examination. I may state that since the 17th June last, the date on which I first found the parasites with a patient during life, I have punctured the spleen 2½ times with no untoward results. The needle of the hypodermic syringe should be fine and the usual anti-septic precautions taken. I am studying the disease and hope to publish a full account shortly. Blood from spleen of real Kala azar cases would be of great service in determining the inclusion or otherwise of this disease in the same category as malar.

(DONOVAN,

November 10th, 1903

Lepur, I. M. S.

2nd Division, Govt. General Hospital,

Meerut.

THE PRIZE ESSAY OF THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—I enclose herewith a notice of the prize essay competition of the Association of Military Surgeons for 1904 upon the subject "The Relation of the Medical Department to the Health of Armies," and would be glad if you would give to the competition as great publicity as possible through the pages of your valuable Journal.

The old adage 'in time of peace, prepare for war,' was never more appropriate than at the present time, and it is the aim of this Association, by carrying research and investigation along medical military lines, to obviate in future to the greatest possible extent the misfortunes which have heretofore attended the collection of large bodies of troops for active service.

Any information not contained in the enclosed circular will be very gladly furnished by me upon application.

With kind regards,

Very faithfully yours,
JAMES EVELYN PUGH.

Secretary and Editor

October 6th, 1903

Service Notes

THE PENN SANDER PRIZE.

The Lieutenant securing First Place will receive a Gold Medal of the value of one hundred dollars. The Lieutenant securing Second Place will receive a life membership in the Association, of the value of fifty dollars.

Subject of the competition for 1904

THE RELATION OF THE MEDICAL DEPARTMENT TO THE
HEALTH OF THE ARMY

Conditions of the Competition

1 Competition is open to all persons eligible to Active or Associate Membership in the Association of Military Surgeons of the United States

2 The prize will be awarded upon the recommendation of a Board of Award selected by the Executive Committee. The Board will determine upon the essay to which the prize shall be awarded, and will also recommend such of the other papers submitted, as it may see fit for honorable mention, the author of the first of which shall receive a life membership in the Association

3 In fixing the precedence of the essays submitted, the Board will take into consideration—primarily—originality, comprehensiveness and the practicability and utility of the opinions advanced, and—secondarily—literary character

4 Essays will consist of not less than ten thousand, nor more than twelve thousand words, exclusive of tables

5 Each competitor will send three typewritten copies of his essay in a sealed envelope to the Secretary of the Association, so as to reach that officer at least one month before the next ensuing annual meeting, in the present case on or before September 10, 1904

6 The essay shall contain nothing to indicate the identity of the author. Each one however will be authenticated by a *non d'plume*, a copy of which shall, at the same time as the essay, be transmitted to the Secretary in a sealed envelope together with the author's name, rank and address

7 The envelope containing the name of the successful competitor will be publicly opened at the next succeeding annual meeting of the Association, and the prize thereupon awarded

8 The successful essay becomes the property of the Association of Military Surgeons of the United States, and will appear in its publications

BOARD OF AWARD—1904

Lieutenant Colonel John Shaw Billings, U S Army, Bravet Brigadier General George Otter-on Fowler, New York, Surgeon Henry Gustav Beyer, U S Navy

John Cropper Wise, President James Evelyn Pilcher, Secretary, Carlisle, Pennsylvania

Military and Naval Medical Officers of the British Services eligible

THE leading editorial of the *Medical Press and Circular* for the 14th October deals with Army Medical Reform in the light of the Report of the Royal Commission on the recent South African War. "In short, the revelations of this Report more than justify the attitude of the Members of Parliament and others who, during the war, called attention to the state of the hospitals and the failure of the Army Medical Administration. Individually, both officers and men performed feats of endurance and of self sacrifice of which any nation might well be proud. They served, however, under a system proved by the late campaign to be as incompetent and rotten as could well be imagined. The inherent feebleness of that system has been again and again exposed during past years in the medical journals. But exposure, unhappily, led to no reform before the day of trial."

The same journal advocates the extension of antityphoid inoculations in the British army in India, on the strength of Dr A E Wright's recent reports. Between 1893 and 1900 there were 1,883 soldiers inoculated out of 55,955 in South Africa, and it is alleged the incidence of typhoid was thereby decreased by one half and the death rate by five sixths

THERE is reason to believe that a hospital ship will be despatched from Bombay with one hundred invalids on three separate trips to Finland, and that in connection with this hospital ship there will be a hospital train from stations in the Bengal and Punjab Commands, so that the sick will be put directly on board without stopping at Deolali

INDIAN MEDICAL SERVICE

A CORRESPONDENT in the *British Medical Journal* for the 17th October shows that among officers of over five years service there are about 335 in civil employ and only 146 in military employ, so the new rules chiefly benefit the juniors and a minority of the seniors. We hope his inference is not correct that extra furlough taken for special study does not count for pension. The increased pensions at seventeen and twenty years are all very well in their way, but after all they affect only a minority. It is to be hoped that Government will deal liberally with the important civil branch of the I M S and that nothing more will be heard of the recent attempt to cut down the ordinary fees and to fix reduced fees for ordinary medical attendance, for operations of a minor or major character, or for midwifery cases

CAPTAIN E C MACLEOD, I M S, on return from leave, is appointed Civil Surgeon, Lushai Hills

PROMOTIONS IN THE INDIAN MEDICAL SERVICE

Majors to be Lieutenant Colonels J Pratt and R Shore, Bengal, W B Bannerman M D, and H Thomson, M D, Madras, C J Sarlies, M D, Bombay

CAPTAIN C B PRILL, I M S, Superintendent, Central Prison, Lucknow, is granted furlough for one year, and Captain J N Walker from Gonda, acts for him

MAJOR L I PISANI, I M S, Civil Surgeon of Shahjhanpur, is transferred to Moradabad, and Major J K Close, I M S, goes to Shahjhanpur

MR L W SEYMOUR, M R O S, L R C P, and I S A, is appointed on return to duty, to be Superintendent, Land Records and Agriculture, Sind

LIEUTENANT A J V BETTS, I M S, acts as Civil Surgeon, Jacobabad in addition to his own duties

LIEUTENANT COLONEL A SILCOCK, M D, I M S, is appointed to officiate as a Civil Surgeon, 1st Class

CAPTAIN A B FRY, I M S, relieved Captain G Browse, I M S, of the civil medical duties of the Mardan Subdivision

CAPTAIN C E P FOWLER, R A M C, has been appointed Assistant Professor of Military Hygiene at the R A M College

LIEUTENANT COLONEL J B GIBBONS, I M S, is confirmed as Civil Surgeon, Howrah

MAJOR J H F WALSH, I M S, is appointed Superintendent, Campbell Medical School and Hospital, Scaldah

MAJOR A H NOTT, I M S, is appointed Civil Surgeon, Murshidabad

MAJOR I P MAYNARD, I M S, is appointed Civil Surgeon, Darjeeling

LIEUTENANT COLONEL R R H Whitwell, I M S, is confirmed as Civil Surgeon, Patna

MAJOR R BIRD, I M S, is appointed Civil Surgeon, Ranchi, but will continue to act as Civil Surgeon, 24 Parganas

CAPTAIN D R GREEN, I M S, is appointed Resident Surgeon, Medical College Hospital, and Professor of Physiology, Medical College, Calcutta, but will continue to act as Civil Surgeon, Midnapore

MAJOR B C OLDHAM, I M S, is appointed to act as Civil Surgeon of Durbhanga

LIEUTENANT COLONEL J B GIBBONS, I M S, is appointed to be a Civil Surgeon of the first class, vice Lieutenant-Colonel A W D Leahy, I M S, retired

THE services of Lieutenant-Colonel R D Murray, I M S, are placed temporarily at the disposal of the Government of India, Home Department, and Major R Bird, I M S, acts for him as Professor of Surgery, Medical College, Calcutta, and Surgeon to the Medical College Hospital

CAPTAIN B R CHATTERTON, I M S, acts as Civil Surgeon, 24 Parganas

LIEUTENANT J MASSON, I M S, acts as Civil Surgeon, Gaya

MAJOR R R H MOORE, R A M C, in charge of the Station Hospital, Dum Dum, is also appointed to have charge of the civil medical duties of that station

LIEUTENANT N S WELLS, I M S, is appointed to officiate as Deputy Sanitary Commissioner, Northern Bengal Circle

CAPTAIN A F STEVENS, I M S, is appointed to act as Civil Surgeon of Shahabad

CAPTAIN G T BIRDWOOD, I M S, is appointed Civil Surgeon of Jaunpur

CAPTAIN J H McDONALD, I M S, Personal Assistant to the Surgeon General with the Government of Bombay, is appointed Certifying Surgeon to the factory within the city limits, in place of the Presidency Surgeons

CAPTAIN A W F KING, I M S, is placed on general duty

CAPTAIN V B BENNETT, I M S, acts as Medical Officer to the Kathiawar Political Agency, *vice* Major J B Jameson, I M S

LIEUTENANT COLONEL O H CHAMBER, I M S, has returned to duty

CAPTAIN R STEEN, I M S, 5th B L I, to the officiating medical charge of the 43rd Gurkha Rifles, and to hold civil medical charge of the Manipur State

MAJOR H L BANATVALA, I M S, is appointed Inspector General of Jails, C P

COLONEL M D MORIARTY, M D, I M S, is appointed Administrative Medical Officer, C P

LIEUTENANT COLONEL C L SWAIN, M D, I M S, is appointed Civil Surgeon and Superintendent, Lunatic Asylum, Nagpur

CAPTAIN W H KENRICK, I M S, is appointed to act as Civil Surgeon of Wardha

MAJOR H B MELVILLE is transferred from Lucknow to be Civil Surgeon of Jhansi

LIEUTENANT COLONEL D F BARRY, I M S, will retire from the service on the 10th December

CAPTAIN W W CLEMESHA, I M S, has got an extension of leave for two months on medical certificate

LIEUTENANT COLONEL R R H WHITWELL, I M S, has been granted privilege leave for one month, and Captain F H Dolanov, I M S, acts for him

LIEUTENANT COLONEL J J MORRIS, M D, R A M O, acts as P M O, Bombay and Nagpur Districts

THE services of Lieutenant G L Charles and of Captain W H Dickinson, I M S, are replaced at the disposal of H F the Commander in Chief in India

SURGEON COLONEL J RICHARDSON, I M S, retired, is appointed an Honorary Physician to His Majesty

MAJOR A G HENDLEY, I M S, is appointed to act as Civil Surgeon of Nimar, and Captain J C S Oxley, I M S, is transferred to Hoshangabad

LIEUTENANT COLONEL D WILKIN, I M S, is granted the temporary rank of Colonel while officiating as P M O and Sanitary Officer, Assam District, *vice* Col C W Carr Calthrop

MAJOR J JACKSON, I M S, Superintendent, Yarnoda Central Prison, has been permitted to return to duty within the period of his leave, so also has Major H C L Armin, I M S

LIEUTENANT COLONEL H P DIMMOCK, I M S, has been appointed Principal, Grant Medical College and resumes his appointment of Professor of Midwifery on return from leave

LIEUTENANT COLONEL W H QUICK, I M S, is appointed Professor of Surgery and Clinical Operative Surgery, Grant Medical College, *vice* Lieutenant Colonel W K Hatch, I M S, retired

MAJOR ASHTON STREET, I M S, is appointed Professor of Anatomy and Curator of Museum, Grant Medical College Bombay

MAJOR T D C BARRY, I M S, on return to duty reverts to his appointment of Professor of Chemistry and Medical Jurisprudence, Grant Medical College

LIEUTENANT COLONEL J L POYNTER, I M S, is posted to the Saugor District, and Major W D Sutherland, I M S, is transferred to Hoshangabad. Captain J C S Oxley, I M S, going to Ellichpur, Berar

CAPTAIN N R J HAINIER, I M S, officiates as Civil Surgeon, Chhindwara, while Captain P K Chitale, I M S, goes on three months' privilege leave

MEDICAL ADMINISTRATION—NATIVE ARMY—The Commander in Chief is pleased to empower the Principal Medical Officers of stations to detail regimental medical officers of the Indian Medical Service for any duty in the Native regimental hospitals in their station, whether of their own or any other corps, as may be necessary

His Excellency is further pleased to direct that regimental medical officers of the Indian Medical Service shall in future be responsible to the Principal Medical Officer of the station, and not to the Commanding Officer of the regiment for the maintenance in proper quantity and quality of all drugs, instruments and surgical and medical appliances. So long as the present hospital buildings situated in regimental lines continue to be used the buildings will remain in regimental charge. Where the hospitals have been or may hereafter be brought together in one enclosure or in one building, these buildings will be in charge of the Principal Medical Officer of the station

Where such amalgamated hospitals exist, the sick of each corps are to be treated in a separate building or a separate ward as the case may be, except in the case of men suffering from infectious or contagious diseases

Whether the hospitals consist of buildings in regimental lines as now, of separate buildings in one enclosure, or of separate wards in one building, the Commanding Officers will continue to exercise the same control as at present and to be responsible for good order and discipline and for all questions connected with interior economy except those specified in paragraph 2

Subordinate medical and medical establishments will remain regimental as at present

THE services of Captain J L Marjoribanks, I M S, are placed permanently at the disposal of the Government of Bombay

CAPTAIN H BURDEN, I M S, Agency Surgeon, Gilgit, is granted three months' privilege leave, and Major C M Moore, I M S, is posted to Gilgit on return from furlough

THE services of Captain G Tate, I M S, are replaced at the disposal of H F the Commander in Chief

THE services of Major L W H Jackson, R A M C, on plague duty under the Chairman of the Calcutta Corporation, are replaced at the disposal of the Government of India in the Home Department

CAPTAIN R P WILSON, I M S, Officiating, Civil Surgeon of Hughli, is granted three months' privilege leave

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis if requested

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co Calcutta

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS Messrs Thacker, Spink & Co, Calcutta

Annual Subscriptions to the *Indian Medical Gazette*, Rs 12, including postage, in India. Rs 14, including postage abroad

BOOKS, REPORTS, &c, RECEIVED

Report on the Working of the Thakal and Dakaiti Department for 1902

Saint Andrew's Colonial Homes Magazine
The Materia Medica of India and their Therapeutics. Two vols. By R N Khory and N N Kutrik. *Times of India Press*
A Manual of Pathology. By J Coats. 5th Edition, revised by Professor I R Sutherland. M D Longmans Green & Co, London New York and Bombay 1903

The After Treatment of Operations. By P Lockhart Mummery. R B S Billero. Hurdall and Cox London, 1903

LETTERS, COMMUNICATIONS, RECEIVED FROM —

Capt D McKay, I M S, Calcutta. Capt L J Waters, I M S, Port Blair. Capt W J Niblock, I M S, Madras. Lieut J Mackie, I M S, Sikkim. Col M D Moriarty, I M S, Nagpur. Lieut Col R Nell Campbell, I M S, Dacca. Major A J Grant, I M S, Bournemouth. A Lancaster M D Peshawar. Major W D Sutherland, I M S, Saugor. Capt Clayton Lane, I M S, Calcutta. Capt F A O Matthews, I M S, Cawnpore. Asst Surgn Feroz Din Mohroof, Jallpur. Capt B W Fleming, I M S, Comilla. Asst Surgn M I Azcom, Lingah, Persian Gulf. W J Wanless, M D Miraj

